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QUERIES AND ANSWERS.

Hydroa.

"W. L." asks for advice in the treatment of a boy, aged 3½ years, who suffers from hydroa. The condition is of six weeks' duration, and recurring on the back, legs, and about the elbows. Arsenic, bismuth carbonate, calcium lactate, magnesia, have been tried internally without success, and an egg-free diet has had no effect.

Pruritus.

Dr. T. C. Hunter (Newcastle-on-Tyne) writes in reply to "W. A." (September 25th, p. 582), who asked for suggestions in the treatment of pruritus, with thickening of the skin of the palms of the hands: I found an eruption of this character, which was probably psoriasis, disappear like magic by rubbing in equal parts of ung. picis, ung. hydrarg. ammon. chlor., ung. salicylic. This treatment was suggested by Dr. Wells Patterson. The eruption, which was extensive and on the instep of the foot, did not recur.

Nervous Vomiting.

"H. W. B." asks for suggestions for the treatment of a young woman, aged 23, of good physique and with no apparent disease of the alimentary tract, who suffers from vomiting after excitement. After an evening dance or an important golf match she sleeps soundly as usual, but awakes about 5 a.m. with a violent attack of vomiting and sickness, which continues for five or six hours, unaccompanied by pain or headache, and ending spontaneously, with no after-effects. The vomit is watery, and the attacks occur irrespective of whether she has had supper or not. The condition has lasted for about two years, in spite of various forms of treatment, including sodium bromide at bedtime.

X-Ray Treatment of Ringworm.

Dr. Chris. J. McSweeney (Cardiff) writes in reply to "T. E. R." (September 11th, p. 511): The use of aluminium filters is theoretically an advantage in eliminating the dangerous soft rays and so minimizing the risks of resultant radio-dermatitis. If the Sabouraud pastille is at half skin distance it will probably be between the filter and the tube, and so will receive unfiltered rays. Its colour will therefore be no guide as to the quantity of rays which has reached the scalp. If the pastille is on the skin—the method originally employed by Hampson in 1911—it of course receives filtered rays, and its colour can be matched as usual with the Lovibond tintometer, against fractions of Teinte β. Kienböck's strips, which are laid on the scalp, furnish probably the simplest method of calculating the dose of filtered rays. Whatever method is employed the time of exposure will be increased—even by 30 to 50 per cent., according to the thickness of aluminium used. As to whether filtered rays give more uniform epilation, I do not think this has ever been claimed for them. My own experience is that unfiltered rays, proceeding from a hard tube, and working with standard conditions of time, distance, voltage, and milliamperage, are more reliable.

Watery Eyes.

Dr. L. J. Green (South Tottenham) writes: With reference to "A. G. F.'s" inquiry (October 2nd, p. 619) as to the origin of his watery eyes, the condition may be due to (1) a drainage fault in the lacrymal passages, perhaps associated with the presence of a mucocele of the lacrymal sac, or (2) a spasmodic hypersecretion through abnormal stimulation via the branch of the fifth nerve which supplies the lacrymal gland. Of these, the first seems the more likely. The most common sites of obstruction to the flow of tears are at the lacrymal puncta, and in the course of the lacrymal duct—for example, in cases of intranasal disease. The condition could be brought about by repeated "colds." It can soon be determined whether the puncta are too small, and obstruction in the lacrymal duct is demonstrated by carefully passing a lacrymal probe. If a mucocele of the lacrymal sac is present the conjunctiva will be flooded with fluid every time the sac is pressed upon and thereby emptied. "A. G. F." should have the above points investigated.

Income Tax.

Sale of Investment.

"R. L. T." has been requested to state the date on which he sold a holding in War Loan, and how the money has been invested. Are these requests justified?

*** It has to be remembered that the inspector of taxes has very little *legal* ground for making inquiries direct of taxpayers. He is entitled to examine the returns, however, and the making of relevant inquiries enables him to agree with the assessments before they are formally authorized by the Commissioners, and thereby to avoid trouble at a later stage to all concerned. The first inquiry is evidently directed to ensuring that the assessment is technically correct and that any appropriate adjustment is made in the previous year's assessment; "R. L. T." may be entitled to some relief if he sold the War Loan in that year. The second inquiry rests on less obvious grounds. Presumably the inspector desires to ensure that no new income has been overlooked. Doubtless a general reply on that point will serve—for example, that it has been reinvested in such a way as to produce income taxed at its source.

Notifications to Panel Patients.

"J. R." explains that his Panel Committee deducted £2 14s. from his first cheque to cover the cost of the postage of notices sent to patients on his predecessor's panel intimating that he had taken over the practice. Can he deduct that amount from the full fees for income tax purposes?

*** No. The expense was incurred in the taking over of the practice—that is, it related, not to the working of it, but to the change in proprietorship, and as such is not allowable for income tax.

LETTERS, NOTES, ETC.

House of Rest, Mentone.

Dr. D. W. Samways (Topsham, Devon) writes to call attention to the fact that invalid professional men requiring a change, and whose means are limited, are received into the House of Rest at Mentone, Riviera, at a charge of 30s. a week, all found, on application to the matron, Miss Goldie, or to Dr. Stanley Rendall, or to Dr. Samways, Mentone, during the winter season.

The home, we believe, is a philanthropic undertaking (apart from the charge of 30s. weekly), and is meant to help professional men who break down temporarily. It is hence useful to medical men of small means or their professional patients in like case.

A Dangerous Drugs Register.

Under the Dangerous Drugs Regulations, 1926, non-dispensing doctors, who have hitherto been exempt from such a requirement, must now keep a record of all "dangerous drugs" purchased or otherwise obtained. The *Register of Dangerous Drugs*, just published by Messrs. Woodrow and Co. (3, Cook Street, Liverpool), admirably serves this purpose in the simplest form consistent with the Regulations. Separate pages, provided with a thumb index, are set apart for the four groups of drugs and their preparations which must be registered—namely, morphine, cocaine, heroin, medicinal opium. In addition there is an excellent summary of the various regulations, 1921 to 1926, so far as they relate to duly qualified medical practitioners. The size of the *Register* is 10 in. by 6 in. The prices are: Bound, 5s.; post free, 6s. 6d.; or in strong Manila boards, 4s.; post free, 4s. 3d.

Treatment of Pruritus Ani.

Dr. Ernest Ward (Paignton) writes: Two medical men who believe themselves to have been immediately and permanently cured by a simple line of treatment have asked me to make known the method I have long used to treat this troublesome affliction. Anal pruritus arises in the great majority of cases from a *perianal dermatitis*, due to repeated infection during the cleansing after defaecation. To cure the dermatitis it is only necessary to avoid soiling the parts concerned. If paper is used each piece should be passed in one sweep from behind forwards, then rejected. Wool or a sponge used similarly may prove more efficient among the many sufferers from haemorrhoids, but paper will serve equally well in most patients and is vastly more convenient.

Vacancies.

Notifications of offices vacant in universities, medical colleges and of vacant resident and other appointments at hospitals will be found at pages 49, 50, 51, 54, and 55 of our advertisement columns, and advertisements as to partnerships, assistantships and locumtenencies at pages 52 and 53.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *163*.

British Medical Association.

PROCEEDINGS OF SECTIONS AT THE ANNUAL MEETING, NOTTINGHAM, 1926.

SECTION OF MEDICINE.

F. H. Jacob, M.D., F.R.C.P., President.

DISCUSSION ON SOME RECENT DEVELOPMENTS IN OUR KNOWLEDGE OF THE BILIARY TRACT.

OPENING PAPERS.

I.—EVARTS A. GRAHAM, M.D.,

Professor of Surgery, Washington University School of Medicine; and Surgeon-in-Chief to Barnes and St. Louis Children's Hospitals, U.S.A.

Mingled with the appreciation of the high honour which you have bestowed on me in inviting me to speak before the British Medical Association is the sense that perhaps even a greater honour has been accorded to me, a mere surgeon, in being invited to appear before the section on internal medicine.

Functions of the Gall Bladder.

The extraordinary interest which has been displayed in the gall bladder in recent years is associated with the ever-increasing evidence that disorders involving this small organ afflict a very large proportion of adult humanity, and that they probably constitute the most frequent organic cause of dyspeptic symptoms. Yet the known normal functions of this structure seem to be relatively insignificant—namely, the regulation of pressure in the biliary system and the concentration of bile by the absorption of water. Other functions are suggested perhaps by the fact that the blood from the gall bladder drains into the portal vein and is thus carried through the liver, as if something from it is useful in the normal metabolism of the liver. But about such possible functions nothing is known at present, although Boyd[1] has proposed that the gall bladder absorbs cholesterol, and Sweet[2] has made the suggestive hypothesis that the gall bladder forms something which acts to de-esterize cholesterol esters. Sweet has also shown that in some of the animals which do not normally possess gall bladders there are innumerable saccules, resembling diverticula, projecting from the walls of the intrahepatic bile ducts. He has found a large number of these saccules in animals from which the gall bladder has been experimentally removed, and he offers the opinion that they compensate for the removal of the organ, in that each saccule may be a miniature gall bladder. Apparently, then, the serious consequences of cholecystic disease must be concerned with phenomena apart from the disturbance of the functions of the gall bladder.

Pathogenesis of Cholecystitis.

In 1918 observations[3] were published which indicated that inflammatory changes in the liver were a constant accompaniment of cholecystitis. During the course of operations on the gall bladder I had removed small pieces of liver tissue for microscopic examination. These had shown uniformly a type of inflammation which was essentially a pericholangitis, chiefly apparent in the interlobular tissue, but often extending upwards to involve even the smallest bile capillaries. Even in the less severe cases of cholecystitis this hepatitis could be demonstrated. This finding has been corroborated by others, notably by Judd[4] and by Heyd, Killian, and MacNeal.[5] In many cases of so-called cholangitis this type of hepatitis had been observed before, but the great frequency of it, amounting to an almost constant finding in cholecystitis, had apparently not been noted.

Later the microscopic examination of gall bladders removed at operation convinced me that, since often more inflammatory change is found at the periphery than in the mucosa of the organ in what seemed to be the early and the less severe cases, too much emphasis had been placed by the pathologists upon the importance of mucosal infection in the pathogenesis of cholecystitis. The clinical observations that patients with cholecystitis sometimes gave a history of having had typhoid fever had had an important influence in the development of the idea that infection of the gall bladder is due to bacteria brought to the liver by way of the portal vein, secreted in the bile, and thence carried into the gall bladder. Numerous difficulties, however, presented themselves with the acceptance of such a theory. In the first place, Cushing[6] and later others found that in experiments on animals it is extremely difficult to infect the gall bladder by the introduction of bacteria into its lumen unless at the same time the cystic duct or the cystic artery is tied or the mucosa injured by the introduction of foreign bodies. Moreover, both Rolleston[7] and Osler[8] showed that cholecystitis is rare during the acute course of typhoid fever, a time when supposedly the bile is teeming with typhoid bacilli. The possibility of a blood-borne infection directly to the gall bladder through the cystic artery was also suggested by many. In recent years Rosenow[9] has been the most enthusiastic exponent of this view.

The constancy of the finding of a hepatitis in association with cholecystitis, and the observation that in many cases the mucous membrane is less involved than the outer coats of the gall bladder, led to the thought that another pathway of infection might be important—namely, the lymphatics.[10] Sudler,[11] working in Mall's laboratory, had already in 1901 shown the very extensive anastomosis which exists between the lymphatics of the liver and of the gall bladder. The richest supply of lymphatic vessels in the gall bladder is situated immediately beneath the serosa. Therefore, cholecystitis which would occur secondarily to a hepatitis would be most likely to begin at the periphery of the gall bladder if a lymphatic extension of the infection should take place here as in other parts of the body. When this idea was put to the test of experimentation it was found possible not only to produce cholecystitis in animals by the injection of bacteria into a radicle of the portal vein, but also it was observed that the cholecystitis was most marked at the periphery of the gall bladder and that the liver showed changes similar to those already mentioned as having been found in the human. In 1921 Meyer, Neilson, and Feusier[12] published the results of their exhaustive experimental work on paratyphoidal infections, in which they made the important observation that cholecystitis did not occur unless there were actual inflammatory lesions in the liver, in spite of the fact that in practically all of their animals the organisms could be found in the gall bladder bile regardless of whether hepatic lesions were present or not. This finding seemed to be additional corroboration of our view of the spreading of a pre-existing inflammation of the liver to the wall of the gall bladder through the lymphatic vessels. It would follow from this, then, that any condition which might induce an infection in the liver might also predispose to cholecystitis. Inflammatory lesions of the portal system would have an excellent opportunity to bombard the liver and to set up a hepatitis. It is not surprising, therefore, that clinicians have long known that cholecystitis is frequently found as a sequel of, or in association with, the most common inflammatory lesions of the portal system—such as appendicitis, peptic ulcer, and typhoid fever.

Other experiments have shown also that hepatitis will follow experimentally produced cholecystitis. The possibility of the establishment of a vicious circle between the liver and the gall bladder is therefore suggested, whereby each may reinfect the other. It is not to be inferred from these conclusions that the opinion is held that all cases of cholecystitis are due solely to a lymphatic spread from a hepatitis. Some are doubtless due to hematogenous infections of the gall bladder, and some are probably due to involvement of the mucosa first and are therefore contact infections.

In our article of 1922 on the lymphatic origin of cholecystitis we made the statement that our experiments indicated that interstitial pancreatitis is also the result of

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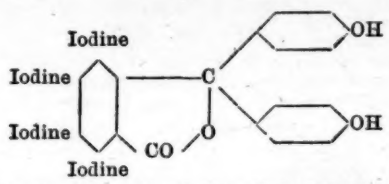


Structural formula of phenoltetraiodophthalein.

A proper conception of the interpretation and value of cholecystography in diagnosis must be based on an understanding of some of the theoretical points involved in its use. The substance used must be excreted by the liver into the bile. It must pass with the bile into the gall bladder, where it must be concentrated by the absorption of water in order to give the densest shadows. It is obvious, therefore, that the densest shadows will be found in normal subjects. It is equally apparent that there may be no shadow at all, or only a faint one, if the liver is unable to excrete the substance normally, if the cystic duct is occluded, or if the gall bladder is unable to concentrate its contents because of a diseased wall. Moreover, as bile is poured out from the gall bladder into the common duct, it is obvious that the shadow will diminish in size and gradually disappear entirely Since the presence of food in the duodenum is accompanied by an outpouring of bile, the necessity of fasting during the period of concentration of the substance in the gall bladder becomes evident. It is seen, therefore, that cholecystography is really a means of studying the function of the gall bladder rather than an indication of the exact pathological lesions present. This method of examination provides a means of determining the state of the only two functions of the gall bladder known—namely, the regulation of pressure within the biliary tract, and the concentration of the contained bile. The former function is shown cholecystographically by changes in the size of the gall bladder, indicating distensibility and contractility; and the latter is shown by an increasing density of the shadow. Since the days of Galen *functio laesa* has been recognized as one of the cardinal signs of inflammation. Presumably, therefore, any method which detects alterations of function would denote early and even mild cases of inflammation. Cholecystography seems to possess this property.

The enthusiasm with which this procedure has been almost universally received has been astonishing. However, the method of administration of these substances which we proposed in our first publications has been considerably modified by later workers. The chief reason for this modification has been a desire to get away from the intravenous administration both because of the more complicated technique necessary and the fear of toxic reactions. Menees and Robinson[21] were the first to recommend the oral administration. The method of oral administration requires the use of a protective coating of some kind to permit the substance to pass into the intestine unchanged, because the hydrochloric acid of the stomach will convert the soluble sodium salt into the insoluble free acid. If this change occurs, absorption will therefore not take place. Various capsules and other sorts of protective coverings have been advocated. I cannot here enter into a complete discussion of this phase of the subject. Excellent discussions of the various methods of oral administration will be found in the articles by Levyn and Aaron,[22] who have carried on extensive experiments with different kinds of protective coatings, by Whitaker, Milliken, and Vogt,[23] by Stewart, Einhorn, and Ryan,[24] and by Larimore.[25] In general, in using the oral method, a slightly larger dose is used than by the intravenous method; the capsules are given after the evening meal, and the patient presents himself before breakfast for his first film. A meal is then taken, preferably one rich in fats in order to empty the gall bladder quickly, and other films are made about four hours later, and at about the twenty-fourth, thirty-sixth, and forty-eighth hours afterwards if the shadow still persists.

There are two serious objections to the oral method: one is the uncertainty of the amount of the substance absorbed, and the other that many toxic disturbances, such as diarrhoea and vomiting, occur. For these reasons, at the Barnes Hospital we have adhered rather closely to the intravenous method, almost as outlined in our early papers and as carried out in Great Britain by Cohen and Roberts[26] with tetrabromphenolphthalein. Improvement in manufacture of the tetraiodophenolphthalein has resulted in our hands in an almost complete absence of toxic reactions after the intravenous administration. Also greater dilution minimizes the reactions, although it is not necessary to use more than 30 c.cm. of fluid if the injection is made slowly and if the vein is washed out with physiological saline or with Ringer's solution immediately after the injection is made. The latter precaution is desirable to avoid thrombophlebitis at the site of injection. The use of the new isomeric compound, the sodium salt of phenoltetraiodophthalein, however, will almost completely obviate toxic reactions. In ninety-seven successive cases in which we have used it intravenously there have been no severe reactions. Of course, as in any intravenous injection, meticulous care should be exercised in the sterility of all materials used, in the use of freshly distilled water for the solutions, and in scrupulous cleanliness of glassware. In the last 150 cases in which we used sodium tetraiodophenolphthalein there was no case in which any alarming reaction occurred. We have personal knowledge of several thousand cases in which the intravenous method has been used, and we know of no death attributable to the substance.

Our own technique is as follows:

For the adult of average size 3 or 3½ grams of the sodium salt of tetraiodophenolphthalein, or 2½ grams of the sodium salt of phenoltetraiodophthalein, are dissolved in from 30 to 50 c.cm. of water, filtered, and sterilized in a boiling water bath for fifteen minutes. The solution is slowly injected with a syringe in the morning between 8 and 9 o'clock, preferably in two equal doses, half an hour apart. Dividing the dose tends to eliminate any risk of a toxic reaction. If given very slowly, however, over a period of ten or fifteen minutes, in one dose there is but little danger of a reaction. Case has recommended the prompt injection of 0.5 c.cm. of adrenaline if any symptoms of a severe reaction occur, such as fall in blood pressure. We have found this helpful in the few cases in which it seemed necessary. Breakfast is omitted in order that the duodenum may be empty during the period of concentration in the gall bladder. For lunch the patient may have a liquid diet, but it should contain little or no protein or fat. The evening meal may be taken as usual. We formerly employed large doses of sodium bicarbonate by mouth, because Cole[27] showed in some experimental work on animals that the reduction of the gastric acidity tended to reduce the amount of bile discharged into the duodenum. He was able to obtain this finding even when care was taken to exclude the passage of gastric contents into the duodenum. Lately, however, we have abandoned the use of the bicarbonate because it has seemed unnecessary. Roentgenograms are made four, eight, and twenty-four hours after the injection. Dr. Sherwood Moore, the director of our department of radiology, prefers not to use the Potter-Bucky diaphragm. A series of films is essential in order to gain information concerning the concentrating function and the changes in size of the gall bladder.

An important modification of this procedure has been made by Milliken and Whitaker,[28] who give a meal containing fat in order to determine the ability of the gall bladder to reduce its size promptly. This is based on important work by Boyden,[29] to which reference will be made later. Case[30] gives his injections at 5 p.m. in one dose, dissolved in 75 to 100 c.cm. of Ringer's solution. The patient takes his evening meal as usual. Films are taken before breakfast. The patient then eats a meal, including egg yolk or milk and cream, and he returns at about noon for more films, which conclude the examination. Wilkie and Illingworth[31] prefer to make the injection between 8 and 10 p.m. after the omission of the evening meal. Pribram, Grunenberg, and Strauss[32] have recommended the use of a preliminary injection of pituitrin in an attempt to empty the gall bladder first.

Accuracy of interpretation of the cholecystograms, obviously, will improve as our experience increases. It is important also to realize that accuracy of interpretation depends very largely upon experience with the particular method of administration. One who is familiar with the results of the intravenous method will often be puzzled by those obtained by the oral method if his experience with the latter has been limited. Normally, after the intravenous method described above a faint shadow of the gall bladder will usually be visible in about four hours. At eight hours it will have increased in density and will often be somewhat smaller, probably because of reduction in volume by concentration. At twenty-four hours the shadow will usually be nearly or completely gone. If, however, no food at all has been taken since the injection the twenty-four-hour shadow may be the densest and smallest of all because of marked concentration. One possible objection to Case's modification of the intravenous method is that, since no films are taken

a lymphatic spread of infection from the liver to the pancreas. This view had already been expressed by Maugeret[13] and by Deaver and Sweet.[14] It has been seriously questioned, however, by Archibald.[15] Recent unpublished work done in our laboratory by Kodama[16] supports strongly Archibald's contention that the lymphatics from the region of the gall bladder pass along anterior to the pancreas but do not actually enter it. It is probable, therefore, that the cases of interstitial pancreatitis which we obtained following experimental hepatitis and cholecystitis were not due to a lymphatic spread but might have been due to a haematogenous infection. Kodama has shown, however, that if the gall bladder becomes adherent to the surface of the pancreas, then injected fluid will pass through tissue spaces directly from the gall bladder to the parenchyma of the pancreas.

Other important results of Kodama's study of the extrahepatic biliary lymphatics are as follows:

When the superficial lymphatics of the first portion of the duodenum are injected with a solution of trypan blue and gelatin the coloured solution is found to enter the wall of the gall bladder through the lymphatic vessels which course along the common duct. If, however, the lymphatics of other portions of the duodenum—the second and third portions—are injected, the dye does not enter the wall of the gall bladder but enters the mesenteric lymph gland which is situated at the beginning of the portal vein after passing through the lymphatic vessels under the peritoneum between the duodenum and the portal vein. Conversely also, when the lymphatics of the gall bladder are injected some of the dye passes into the lymphatics of the first portion of the duodenum.

The possible bearing of these findings upon the association of cholecystitis and duodenal ulcer is obvious; and they suggest another method of pathogenesis of cholecystitis in addition to the one proposed above, which in turn has resulted from infection brought to the liver by the portal vein from a lesion in the portal system. This work of Kodama's would indicate that a duodenal ulcer might induce cholecystitis directly by means of lymphatic extension without the intervention of a hepatitis. The constancy of the finding of a hepatitis in association with cholecystitis might, then, be due in some cases to an infection of the liver secondarily to the gall bladder. Kodama has also found that the lymph which comes from the liver, gall bladder, pancreas, and first portion of the ascending colon all drains eventually into the lymph gland which is located at the beginning of the portal vein. On the other hand, the lymph from the rest of the intestine is discharged into the various other mesenteric lymph glands.

Diagnosis of Cholecystitis.

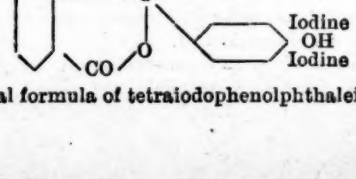
The diagnosis of typical cases of cholecystitis, either with or without calculi, is usually easy by means of the clinical history and ordinary physical examination. But the conditions which give rise to the typical signs and symptoms are usually late effects of disease. Obviously it would be desirable to have some means of recognizing the presence of disease before the late effects have occurred, and equally desirable would it be to have a means of recognizing the atypical and obscure cases. I shall not discuss here the use of the well known tests of hepatic function and similar methods, preferring to leave this question to those in this symposium who are better qualified than I to discuss them intelligently.

The remarkable advance in gastro-intestinal diagnosis made possible by the giving of a meal opaque to the Roentgen ray—a method first utilized by Cannon of Boston in physiological experiments—gave rise to the thought that similarly far-reaching results might be obtained if some method could be devised whereby the gall bladder could be visualized. The previous work of Abel and Rowntree,[17] which showed that the chlorinated phenolphthaleins are excreted largely through the liver into the bile, offered the suggestion that if atoms of bromine or iodine should be substituted for chlorine a substance might then be at hand which would not only be excreted into the bile but would also render the gall bladder opaque to the Roentgen ray.

With such ideas in mind, in the summer of 1923 W. H. Cole and I,[18] later in association with Copher and Moore,[19] undertook to investigate this problem. Because of the high atomic weight of iodine the first substance which we used was tetraiodophenolphthalein, and we succeeded in demonstrating the fact that with this substance cholecystography is possible, at least in dogs. But because of some severe toxic reactions resulting from the use of our first preparations, which we felt might be inherent in the substance itself, we resorted to the use of tetrabromphenolphthalein, which happened to be accompanied by much less toxic disturbance than our first preparation of tetraiodophenolphthalein. Accordingly, therefore, we were exceedingly cautious about using the iodine compound in the human, and in our first publications we recommended the use of the bromine product. More careful preparation, however, showed that it was possible to manufacture tetraiodophenolphthalein free from toxic impurities; and we accordingly later recommended that instead of the bromine product. The toxic reactions are due chiefly to the phenolphthalein part of the molecule. Since the tetraiodo compound can be given in smaller doses with equally good results because of the higher atomic weight of iodine, obviously fewer toxic reactions would be expected than with the tetrabrom product. Such was found to be the case. Whitaker and Milliken[20] of Boston, in January, 1925, reported their good results obtained with tetraiodophenolphthalein, and recommended the substitution of that for the bromine product. Their article appeared practically simultaneously with one of ours, in which we reported the resumption of work with tetraiodophenolphthalein, but in which we exercised caution in recommending its use because of marked differences in toxicity which we had noted in samples from different manufacturers, and also because we were not certain of the stability of the substance on standing. These young men are entitled to credit for having gone ahead independently and on their own initiative in an attempt to improve the method of cholecystography, and they have helped much to popularize the procedure.

In the United States the iodine compound has almost entirely supplanted the bromine product. The use of the tetraiodophenolphthalein does not change in any way the standards of interpretation as worked out for the tetrabromphenolphthalein. Presumably the criteria of interpretation would be the same for any substance which would make the gall bladder opaque to the Roentgen ray. We have experimented with forty different substances, some of which have never been made before. These various substances have been mentioned in our publications. Of the forty different substances which we have used, eleven have been found to have the power of making the gall bladder visible. But of these eleven there seem to be only three which are suitable for clinical use; these are tetrabromphenolphthalein, tetraiodophenolphthalein, and the isomeric compound of the latter, phenoltetraiodophthalein. Recently we have found another substance, tetraiodoisophenolphthalein, which may prove to have advantages over any of the others. But we have not yet had sufficient experience with it to be sure of its possibilities.

All three of these substances are secreted almost entirely by the bile—approximately 98 per cent. as shown experimentally in the dog. Recently we have found that phenoltetraiodophthalein not only produces good shadows of the gall bladder, but also colours the serum sufficiently after alkalinization of it to make it possible to employ it as a test of hepatic function in a manner similar to the Rosenthal test with phenoltetrachlorphthalein. Therefore, by those who place confidence in the diagnostic value of tests of hepatic function, this substance may be used simultaneously for cholecystography and for tests of hepatic function. It also colours the urine after alkalinization, but since only about 2 per cent. of it is secreted in the urine it will probably not be of much value as a test of renal function. The structural formulae of these two isomeric iodine compounds are as follows:



Structural formula of tetraiodophenolphthalein.

repeatedly watched the visualized gall bladder with the fluoroscope with the hope of detecting contraction waves, but we have never seen any. It is significant also that, so far as I have been able to discover, only one surgeon has claimed to have seen the gall bladder contract. Matsuo,[37] a Japanese surgeon, states that once he saw it contract during the course of an abdominal operation performed under local anaesthesia. When one considers the millions of abdominal operations which have been performed both on the human subject and on experimental animals, it seems strange that contractions have not been frequently observed if they occur. Moreover, it is a striking fact that stimuli which are well known to have the power of inducing vigorous contractions in the urinary bladder and in the stomach and intestine fail utterly to elicit any visible response when applied to the gall bladder. Thus one can stimulate it with an electric current, as was first shown by Boyden and Whitaker and later corroborated by us, pinch it with a clamp, incise it with a knife, or touch it with a cautery, without the least demonstrable contraction. Periodic contraction waves, however, have been described by Bainbridge and Dale,[38] and later by others. These have been noted by observing and registering periodic changes in pressure within the organ. But these waves are usually synchronous with respiratory movements, and they seem to be caused by such movements rather than by any inherent contraction of the muscle of the gall bladder itself. My associates Copher and Kodama[39] have found, for example, that if care is taken to prevent the pressure of neighbouring organs upon the gall bladder the periodic contraction waves are no longer apparent. Moreover, if a rubber bag be substituted for the gall bladder, periodic contraction waves, like those described by Bainbridge and Dale, can be recorded. They can scarcely, therefore, be considered as due to contractions of the muscle of the gall bladder. Boyden has called attention to the comparatively small amount of muscle tissue present, but, on the contrary, to the large amount of elastic tissue in the wall. One would expect also that if a muscular contraction occurs in a manner analogous to that of the urinary bladder or of the stomach the gall bladder would sometimes be found practically empty. Yet I know of no observation that a normal gall bladder has ever been found in this condition. Cholecystography should again be of help in elucidating this point. But, although the gall bladder is seen by this means to reduce its size, there is no evidence that this diminution has been accomplished by a contraction of its muscle. Copher[40] has shown that if one daily injection of tetraiodophenolphthalein is given to a dog over a period of several days, the gall bladder is always visible during the time of the experiment, despite the fact that the animal is permitted to carry out its normal activities as regards food, exercise, etc. The results of this experiment furnish a strong indication that the gall bladder can never be empty under normal conditions. All of these observations, therefore, suggest that contraction of the muscle of the gall bladder must play an insignificant part in its emptying. How, then, does it empty itself of its contents?

Without the aid of muscular contractions other possible mechanisms of emptying are: (1) abdominal pressure, either with or without the assistance of respiratory movements; (2) a gradual washing out of the gall bladder by the ingress of fresh liver bile; (3) elastic recoil of the overdistended viscus when the pressure in the common duct is suddenly reduced by the opening of the duodenal end of the duct; and (4) absorption of its contents through the wall. The last possibility needs hardly to be considered seriously, since the evidence is incontrovertible that, except for the absorption of water, the contents of the gall bladder normally pass down the cystic duct and into the intestine. The thick dark bile of the gall bladder can even be recovered with the duodenal tube. There is also much other evidence which I feel unnecessary to mention here.

Recently it has been possible to show that the gall bladder can empty itself by calling into play only the two mechanisms of a gradual washing out by the inflow of fresh liver bile and of elastic recoil. Most of the experimental work involved has been performed by my associates Copher and Kodama, and our report of it has not yet been published.[41] The most decisive experiment bearing on this point has been as follows: The gall bladder of a normal dog was removed and for it a small rubber bag was substituted, establishing a connexion with the cystic duct by means of a glass cannula. The artificial gall bladder was then encased in a celloidin cylinder in order to obviate the effect of intra-abdominal pressure. After an intravenous injection of tetraiodophenolphthalein the artificial gall bladder became clearly visualized and gradually lost its visibility in a manner quite analogous to what we are accustomed to see in a series of normal cholecystograms. The chief differences from the normal series were that the shadow appeared more slowly and disappeared more slowly. These differences were probably due to an obvious inability on the part of the rubber gall bladder to concentrate its contents, the absence of the factor of intra-abdominal pressure, which probably plays a role of some importance in the normal emptying, and the fact that the distensibility and elastic recoil of the rubber bag were not identical with those of the normal gall bladder. Kodama[42] has devised an ingenious model to show how it may be possible for the gall bladder to empty itself without the aid of active contractions of its wall. His article will appear in a forthcoming number of the *American Journal of Physiology*.

These findings are opposed to the current conception that certain substances—as, for example, magnesium sulphate and pituitrin—empty the gall bladder by causing a contraction of its walls. How, then, do they act? To answer this question it is necessary to consider the duodenal end of the common duct. Since Oddi's description of the sphincter which bears his name it has generally been agreed that this structure is a factor of great importance in controlling the outflow of bile into the duodenum. Recent anatomical study, however, has shown that it is not always present. Again, as shown by the work of Copher and Kodama, it is unnecessary to assign to the sphincter the chief control of the outflow of bile. It will be recalled that the common duct passes obliquely through the duodenal wall for a considerable distance. According to Quain,[43] in human beings this distance amounts to 2 or 3 cm. Contractions of the duodenal wall would therefore tend to occlude the common duct independently of the sphincter at the end. Conversely, also, relaxations of it would permit bile to flow out unless the sphincter acted independently. Experimentally bile may be seen to spurt out of the ampulla with each peristaltic wave of the duodenum. The initial relaxation phase, followed by the contraction phase of each peristaltic wave, would have a "milking" effect on the duct. Each peristaltic wave of the duodenum, therefore, should result in some elastic recoil of the gall bladder itself, by which there would be a spurting out of a little of the gall-bladder bile. Likewise, those substances which induce most active duodenal peristalsis should be most powerful in their ability to empty the gall bladder. At any rate, the supposedly specific effect of pituitrin and magnesium sulphate in emptying the gall bladder seems to depend chiefly, if not entirely, on the production of duodenal peristalsis. Moreover, these substances are not nearly so powerful in this respect as certain fats—for example, egg-yolk and cream, as shown by Boyden. Sosman, Whitaker, and Edson[44] have found that a meal containing egg-yolk and cream can reduce the cholecystographic shadow of the gall bladder to about one-tenth of its former size within the brief time of one hour and forty-five minutes. Copher and Kodama have found that oleic acid is even more powerful in this respect. Burget[45] and Carlson[46] have also stressed the importance of the tonus of the duodenal muscle in the control of the outflow of bile, and they consider that undue importance has been attached to the supposed sphincter of Oddi.

My associates and I think, therefore, that the experimental evidence is all against Meltzer's hypothesis of the contrary innervation of the sphincter of Oddi and the gall bladder, by which it was supposed that the same stimulus which opens the sphincter induces an active contraction of the muscle of the gall bladder. On the contrary, we feel that the emptying of the gall bladder is largely a passive phenomenon in which occur: (1) the recoil of the elastic fibres in an effort to establish an equilibrium of pressure between the lumen of the gall bladder and that of the common duct when the intraductal pressure is suddenly lowered by the opening

until fourteen or fifteen hours after the injection, the information obtained about the concentrating activity of the gall bladder is less complete than if a series is made during the phase of concentration.

The chief points in making the diagnosis of cholecystic disease are: (1) Failure to obtain a shadow when the technique has been properly carried out. We agree with Carman,[33] in his statement based on a study of 1,100 cases, that a failure to obtain a shadow is unexcelled in diagnostic value. (2) Filling defects. Soft calculi which are otherwise invisible frequently are seen in the cholecystograms as "negative" shadows, or filling defects. They occupy space in the gall bladder which would otherwise be filled with the opaque substance. Many small stones often produce a mottled appearance which is very characteristic. (3) Irregularities of contour, denoting adhesions, diverticula, etc. (4) Variations from the normal in density of shadow, in the time of appearance and disappearance of the shadow. These last criteria are more difficult points to interpret than the former, and they constitute most of the failures in diagnosis. Other difficulties of interpretation have been encountered in certain cases of hepatic enlargement of unknown etiology.

If the new substance, phenoltetraiodophthalein, is used the time of examination can perhaps be shortened. This substance seems to pass through the liver more quickly than the others, with the result that usually at the end of four hours a moderately dense shadow of the gall bladder is seen.

Up to May 20th, 1926, we had examined at the Barnes Hospital 1,041 patients with tetraiodophenolphthalein and 103 with phenoltetraiodophthalein, a total of 1,144 patients with one or the other of the iodine compounds. In this series there were 128 operations at which the gall bladder was removed and an opportunity provided for a microscopic examination of it. On this basis the operation confirmed the Roentgen-ray diagnosis in 124 cases. Thus, the cholecystographic diagnosis was corroborated in 96.9 per cent. of the cases in which there was an opportunity to control it accurately. The examinations were divided as follows:

Tetraiodophenolphthalein.

Intravenous	750 cases (72.0 per cent.)
Oral	289 cases (27.8 per cent.)
Rectal	2 cases (0.2 per cent.)
Total ...	1,041

Phenoltetraiodophthalein.

Intravenous	97 cases (94.2 per cent.)
Oral	6 cases (5.8 per cent.)
Total ...	103

Concerning toxic reactions, we have had no alarming symptoms in any of the last 500 cases. In seeking the data for the following tabulations it has been our custom to ask the patient to observe himself closely for the development of the slightest subjective symptoms. It is probable that often the alleged effects of the administration of the material have been imaginary, owing to the apprehensiveness of the patient. At most they have been transient. For convenience of classification the reactions have been divided into two kinds: In "1st degree" are included headache, dizziness, slight nausea, weakness, and "nervousness." In "2nd degree" are diarrhoea, vomiting, severe nausea, pain in back and abdomen, fever, "smothering," chills, and urticaria. The tabulated results are as follows:

Reactions in the last 300 Cases of Tetraiodophenolphthalein.

Intravenous method:	
Total number of cases	205
Cases showing reaction:	
1st degree reaction	73 cases (35.6 per cent.)
2nd degree reaction	36 cases (17.5 per cent.)
Total ...	109 cases (53 per cent. of intravenous)
Oral method:	
Total number of cases	93
Cases showing reaction:	
1st degree reaction	17 cases (18.2 per cent.)
2nd degree reaction	45 cases (48.0 per cent.)
Total ...	62 cases (66 per cent. of oral)
Rectal method:	
Two cases. No reaction.	

Reactions in 103 Cases of Phenoltetraiodophthalein.

Intravenous method:	
Total number of cases	97
Cases showing reaction:	
1st degree reaction	24 cases (24.7 per cent.)
2nd degree reaction	12 cases (12.4 per cent.)
Total ...	36 cases (37 per cent. of intravenous)
Oral method:	
Total number of cases	6
Cases showing reaction:	
1st degree reaction	2 cases
2nd degree reaction	1 case
Total ...	3 cases (50 per cent. of oral)

Two facts stand out prominently from these tabulations: (1) that fewer toxic reactions occur after the intravenous than after the oral method of administration, this fact being especially noticeable as regards the more severe or second degree reactions; and (2) that the use of phenoltetraiodophthalein is accompanied by fewer reactions than tetraiodophenolphthalein.

Occasionally criticisms have been raised against the diagnostic value of cholecystography on the ground that sometimes a normal series of shadows is obtained when at subsequent operation pathological changes are found in the gall bladder. Richter,[34] for example, in a recent article, calls attention to the recurrence of attacks of gall-bladder disease, and states that probably in the intervals and in the early stages of disease the cholecystographic examination would show a normal gall bladder and hence would be misleading. It is possible that this fear may be correct, but, so far as I know, there are no data to support it. Our own experience is all opposed to this possibility. Richter apparently falls into the common error of regarding "thick tar-like bile" in the gall bladder as pathological. On the contrary, of course, such bile is a normal finding, and it is a clear indication of the fact that the concentrating function of the gall bladder is not impaired. It is our belief also that cholecystography, when properly performed, will give evidence of disease before it is recognizable by any method short of microscopic examination of the gall bladder. This has been our experience repeatedly.

Questions such as these bring up for consideration the more important question of what criteria shall be taken for determining abnormality. Is an organ that is functioning normally to be considered as essentially normal in spite of old evidence of disease? Or are we to conclude that even old pathological lesions—as, for example, adhesions—are to be taken as evidence of active disease demanding treatment? If its function is normal we do not consider a finger diseased simply because it may present an old scar as evidence of a previous infection. It is possible, therefore, that a functional test of the gall bladder, such as is made possible by cholecystography, will really prove to be a more accurate index of the actual condition of the organ than gross pathological anatomical findings at operation. But diagnoses of normality in the presence of a clinical history and clinical findings suggestive of cholecystitis should be made with caution, and only after experience with the method.

The Mechanism of Emptying of the Gall Bladder.

Cholecystography, in addition to its clinical application, has been useful in studying the physiological problem of the mechanism of emptying of the gall bladder. In 1917 Meltzer[35] published his now famous hypothesis of the contrary innervation of the sphincter of Oddi and of the gall bladder, by which was meant that a relaxation or opening of the sphincter was accompanied by a simultaneous contraction of the gall bladder. This hypothesis was rather generally accepted, and upon it was based the well known Lyon[36] procedure of the so-called non-surgical drainage of the gall bladder by the use of instillations of magnesium sulphate into the duodenum. But as a matter of fact there is little experimental evidence to support Meltzer's conception.

If any contraction of the musculature of the gall bladder occurs it must be exceedingly slight and of little significance. My associates and I, as well as others, have

modern methods of investigation, which require special experience for their performance and for the interpretation of the results, that cholecystitis can be diagnosed with a considerable degree of certainty, and a scientific basis can be obtained for the rational treatment of each individual patient. The investigation should be sufficiently complete to decide whether any other conditions, such as a gastric or duodenal ulcer, chronic appendicitis, caecal and ascending colon stasis, and achlorhydria or hyperchlorhydria, are associated with it.

A carefully taken history should in most cases arouse suspicion when cholecystitis is present. Everybody should be familiar with Sir Berkeley Moynihan's classical description of the "inaugural symptoms of gall stones," which are now recognized as the symptoms of cholecystitis, having no direct connexion with the presence of stones. The abdomen should, if possible, be examined at a time when the patient is actually suffering from discomfort; the gall bladder itself is then always found to be tender. In this connexion I was surprised that Dr. Graham did not mention what I have myself found the chief use in the milder forms of cholecystitis, as distinct from gall stones, of the wonderful new method of visualizing the gall bladder which we owe to him—I refer to the palpation of the visualized gall bladder under the *x*-ray screen. Just as tenderness in the right iliac fossa should never be regarded as due to a tender appendix until the visualized appendix has been palpated under the *x*-ray screen, so tenderness in the right hypochondrium should now never be regarded as certainly due to a tender gall bladder, and not to a tender liver or duodenal bulb, until an examination has been made with the aid of cholecystography. I believe that there are many cases of slight, non-surgical cholecystitis in which this is the only radiological sign of disease.

Areas of referred tenderness, for many of the details of which we are indebted to the recent investigations of J. A. Ryle, are of great importance, and in a large proportion of cases reflex rigidity of the right hypochondrium is also present.

The radiological investigation should not only comprise Dr. Graham's method, but also a preliminary search for biliary and renal calculi, and an examination after an opaque meal of the stomach, duodenum, appendix, and colon, for such complications as ulcer, chronic appendicitis, and stasis of the ascending colon.

I am not convinced by Dr. Graham's arguments that the gall bladder does not actively contract when magnesium sulphate is introduced into the duodenum. The sudden abundant flow of bile which follows could hardly be explained in any other way; and how is it possible to explain the occurrence of biliary colic when a stone is impacted in the mouth of the cystic duct except by active spasmodic contractions of the gall bladder?

By Lyon's method it is possible to recognize inflammatory exudates from the mucous membrane of the gall bladder, such as leucocytes, disintegrated columnar epithelial cells, and occasionally red blood corpuscles, and to determine the nature of any biliary infection which may be present. It is interesting to note that in the late stages, when cholecystitis has become complicated by the presence of gall stones, the bile generally becomes sterile, any persisting infection being then confined to the wall of the gall bladder and perhaps the stones, while crystals of cholesterol, which are never found in the bile of uncomplicated cholecystitis, often appear. We have quite failed to confirm Rosenow's theory of the streptococcal origin from the teeth and tonsils of most cases of cholecystitis, as the infection is almost always due to pathological types of coliform bacilli, and streptococci have only been found in a single case. In one woman with cholecystitis and gall stones Dr. Knott isolated the *B. typhosus* from the bile obtained through a duodenal tube twenty-three years after she had had typhoid fever. When Graham's method fails to give a shadow of the gall bladder, it is clear that the Meltzer-Lyon method will also fail to procure a specimen of bile from the gall bladder. This explains the occurrence before the introduction of cholecystography of cases in which normal bile was found, but in which the gall bladder was grossly diseased and perhaps filled with stones, the bile having come from the healthy hepatic ducts and not from the gall bladder. It is therefore best always to let the cholecystography precede the examination by Lyon's method.

Lastly, a fractional test meal should always be given, as either hyperchlorhydria, or, more frequently, hypochlorhydria or achlorhydria, is present in a large proportion of cases. The discovery of this is often of considerable importance; thus, a patient with achlorhydria may continue to suffer from symptoms due to this cause after his gall-bladder disease has been cured either by medical or surgical means if he is not given acid.

Treatment.

The medical treatment of cholecystitis, in the stages in which the bile is infected but the wall of the gall bladder is either not infected at all or only superficially or slightly infected, often leads to complete recovery. As there are no means of recognizing which cases will respond to medical treatment, it should always be given a trial in uncomplicated cases. Even in cases of gall stones with infective cholangitis unless the symptoms are very urgent, a few days' preliminary medical treatment will often convert a very dangerous septic operation into a comparatively safe one.

The treatment consists in attempting to sterilize the biliary passages by very large doses of urotropine and in promoting biliary drainage. The question of diet I will leave to Dr. McNee. Dr. Knott has shown that the urotropine acts as a biliary antiseptic in spite of the alkalinity of the bile, although it is inactive in alkaline urine and alkaline serum. Consequently its action on the bile is not impaired when sufficiently large doses of alkalis are given to keep the urine permanently alkaline in order to prevent the bladder from being irritated by formalin, which is set free in acid urine. A mixture is prepared containing 100 grains of urotropine to the ounce, and another containing 1 drachm each of sodium bicarbonate and potassium citrate to the ounce. Half an ounce of the former and one ounce of the latter are given after breakfast, after tea, and after a tumbler of milk or water last thing at night. The dose of the urotropine mixture is increased by 1 drachm each day until the full dose of 100 grains of urotropine is taken three times a day. This can often be continued for many weeks without unpleasant symptoms; if any bladder irritation occurs, the dose of urotropine is temporarily reduced, and, if the urine is found to be occasionally acid, more alkali is added to the second mixture. Dr. Knott has recovered urotropine from the bile obtained through a duodenal tube, and in several patients has actually demonstrated the sterilization of infected bile. In most cases we have also given the patient a course of vaccine made from the organism isolated from the bile.

Biliary drainage is promoted by giving magnesium sulphate in concentrated solution one hour before breakfast, in just sufficient quantity to get the bowels satisfactorily opened without the use of any other aperient. My colleague, Dr. J. F. Venables, has demonstrated that magnesium sulphate given in this way produces just as good a flow of bile as when it is introduced direct into the duodenum, so that the unpleasant method of non-surgical biliary drainage recommended by Lyon, in which a duodenal tube is passed every day, is quite unnecessary.

When achlorhydria is present one drachm or more of dilute hydrochloric acid should be given in about five ounces of sweetened water, to which the juice and pulp of an orange may be added, half an hour before breakfast, to help to sterilize the stomach and duodenum, and, with the addition of pepsin, as a beverage with lunch and dinner, in order to make gastric digestion possible. When hyperchlorhydria is present the pain, which is then often very similar to that of duodenal ulcer, can generally be relieved by taking half an ounce of olive oil before meals. This has the additional advantage of causing a flow of bile by a similar reflex to that produced by magnesium sulphate.

I hope I have succeeded in showing how recent advances in our knowledge of the gall bladder have made it possible to diagnose and treat cholecystitis with such success that we may hope that in the future the dissemination of this knowledge will result in a great reduction in the incidence of gall stones.

of its duodenal end; (2) the washing out of the gall bladder by the inflow of fresh hepatic bile; and (3) increases in intra-abdominal pressure. Moreover, in the control of the outflow of bile from the common duct, the most important factors seem to be the tonus and the peristaltic movements of the duodenal muscle.

Summary.

1. The pathogenesis of cholecystitis is discussed and evidence is given to show that one neglected idea of its origin is by way of the lymphatics from a pre-existent hepatitis.

2. The frequent association of cholecystitis with other inflammatory lesions of the portal system is perhaps explained on this basis.

3. Cholecystography is a test of the only two functions of the gall bladder known at present. Partly because of this reason it will detect even early and comparatively mild cases of cholecystitis.

4. In our hands it has been the means of accurately diagnosing 96.9 per cent. of the cases controlled by operation in a series of 1,144 patients in which cholecystectomy was performed 128 times.

5. The severe toxic reactions have been practically eliminated.

6. Phenoltetraiodophthalein has many advantages over tetraiodophenolphthalein.

7. The mechanism of emptying of the gall bladder is discussed, and much doubt is cast upon Meltzer's hypothesis of a contrary or reciprocal innervation between the sphincter of Oddi and the gall bladder.

8. The muscle of the gall bladder seems to play at most a very minor role in its emptying.

9. The mechanism of emptying seems, on the contrary, to be largely passive, in which important factors are the elastic recoil of a distensible viscus, gradual washing out of the gall bladder by the ingress of fresh hepatic bile, and increases in intra-abdominal pressure.

10. A rubber bag substituted for the gall bladder in a living animal fills and empties in a manner very similar to the normal gall bladder.

11. The control of the outflow of bile from the common duct is dependent chiefly upon the tonus of the duodenal wall.

12. Those substances which are supposed to have a somewhat specific effect in emptying the gall bladder probably owe their action chiefly to their ability to induce peristalsis of the duodenum, with a resultant milking action of the common duct.

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II.—ARTHUR F. HURST, M.A., M.D.Oxon., F.R.C.P.,

Physician to Guy's Hospital.

The Diagnosis and Treatment of Cholecystitis and the Prevention of Gall Stones.

Gall stones are found in about 10 per cent. of the bodies of all people dying after the age of 20. Since in most, if not all, cases their formation is preceded by cholecystitis, and as cholecystitis is often not followed by cholelithiasis, the former must occur at some period in the lives of a considerable proportion of all adults. It is, I am convinced, the most common of all abdominal diseases. In spite of this it is comparatively rarely diagnosed, largely owing to the fact that until quite recently textbooks of medicine gave most inadequate descriptions of the symptoms and diagnosis of the common mild form of chronic cholecystitis, attention being almost confined to the comparatively rare and consequently much less important suppurative and gangrenous forms of the disease.

Every general practitioner must constantly have numerous cases of cholecystitis among the chronic dyspeptics under his care, but how often does he make the diagnosis? He realizes that in most cases the presence of gall stones calls for the help of a surgeon; he should recognize that chronic dyspepsia, which does not quickly yield to treatment, calls just as loudly for the help of a diagnostic team, consisting of a clinician, a radiologist, and a pathologist, since it is only by the use of certain

disease and to establish or disprove the existence of the hyper- and hypo-kinetic types of biliary stasis described by Westphal. The gradual disappearance of the gall-bladder shadow, and its uninterrupted persistence when repeated doses of the drug were administered, gave further proofs that the gall bladder never emptied itself completely. This retention of a constant residuum of content might explain in some measure the liability of the gall bladder to calculous disease, as also the relatively silent course which gall-stone cases so often pursued. In Professor Wilkie's experience there was only one condition in which an empty gall bladder was found, and that was a complete obstruction of the common duct or of both hepatic ducts above the entrance of the cystic duct. Dr. Graham's visit to explain and demonstrate his methods and results was emblematic of the catholicity of medicine, of the close bond between the members of the profession in the two nations, and a compliment to the Association which was appreciated very heartily.

Dr. C. F. W. ILLINGWORTH (Edinburgh) stated that cholecystography was in fairly general use in Edinburgh and was becoming an almost routine diagnostic measure. The cases of which he had kept accurate records numbered 132, the great majority of these being under the care of Professor Wilkie. In all of them the intravenous method was used, 4 or 5½ grams of sodium tetraiodophenolphthalein being injected. They had given the drug by the mouth in only a few cases early in their series; the results were not satisfactory. They then commenced to give the dye intravenously, and as by this method the test had proved reliable and without danger, they had hesitated to change the technique. Dr. Illingworth believed, however, that if the oral method could be shown to be equally reliable it was obviously the method of choice. Until, however, complete absorption of the drug from the intestine could be ensured, accurate results could be hoped for only by intravenous injection.

Their technique differed in no essential respect from that of others, but recently they had introduced a slight modification. A few hours before the injection a large dose of magnesium sulphate was given, with the object of securing a partial emptying of the gall bladder and ducts, which were then refilled by the fresh dye-laden bile from the liver. With regard to the after-effects of the injection, their experience had, perhaps, been more fortunate than that of others; only once had any alarming sequel occurred. In this case there was a rather serious collapse before half the fluid had been injected, the collapse persisting for nearly half an hour. A rigor occurred once, but it was transitory and passed off without later ill effect. One patient had a severe headache and one complained of tingling in the limbs. Of the remainder, 61 per cent. suffered no discomfort; the others had varying degrees of nausea or vomiting, never alarming, and invariably passing off in a few hours.

In 111 cases Professor Wilkie had carefully examined the gall bladder at the operation. Dr. Illingworth had classified this series in various groups to illustrate the value of the test.

Group 1.—In 39 cases no gall-bladder shadow was present in the *x*-ray film (which was usually taken twelve to fifteen hours after the injection). Of these patients, 35 were found to present gross disease of the gall bladder or ducts, stones, neoplasm, or well marked cholecystitis, thus confirming the *x*-ray diagnosis. In the remaining four cases the gall bladder and ducts appeared quite healthy. The reason for this discrepancy was to be found, perhaps, in their technique. In these cases radiograms were taken at one period only, some twelve or fifteen hours after the injection. If a whole series of exposures had been made at varying intervals after the injection a correct diagnosis might have been made.

Group 2.—This group included 53 cases in which a gall-bladder shadow of apparently normal appearance was obtained. The results of this group were rather less satisfactory. In 45 the diagnosis was confirmed, the gall bladder being healthy. In the remaining 8, however, the investigation was misleading. One gall bladder contained stones, few in number and too small to be visible on the *x*-ray film. In 4 a slight degree of cholecystitis was visible to the naked eye. The remaining 3 cases were of particular interest. At operation the gall bladders were of fairly healthy appearance and no stones were present. The clinical histories had, however, been very typical, and it was thought advisable to carry out a bacteriological examination of the bile and the gall-bladder wall. In all 3 cases culture of one or both tissues gave a growth of avirulent diplo-streptococci.

Group 3.—This group was a smaller one and required little description. It included those 8 cases where gall stones were visible within the shadow of the gall bladder. It was a point worth mentioning that the concentration of the dye around the stones might be of value as an index of the condition of the gall-bladder wall and as a guide to operative treatment.

Group 4.—In 9 cases the cholecystogram was poor and ill defined, and in these cases gross disease of the gall bladder was found to account for the appearance. Reliance could only be placed on the density of the gall-bladder shadow as an index of its functional capacity if the radiogram was a good one; in very stout patients this might be difficult to obtain.

Group 5.—There was only one case in this group. The cholecystogram showed a well marked hour-glass deformity, which was found later to be due to a very localized induration of the gall-bladder wall.

Group 6.—In patients suffering from obstructive jaundice the investigation had proved of no value. Whether the obstruction was complete or partial, the amount of dye excreted by the liver was insufficient to produce a shadow.

Group 7.—The last group included those cases in which a palpable swelling was present in the upper abdomen. In these cases cholecystography had proved of great value. The position of the lump in relation to the gall bladder could be accurately defined and the differential diagnosis was thereby narrowed down. Their series included 5 such cases, and in each the investigation had been of real value. One patient, previously operated upon for an endothelioma in the thigh, developed a swinging temperature and a palpable swelling in the right upper quadrant of the abdomen. Cholecystography revealed a well defined gall-bladder shadow below the level of the lump; a diagnosis was made of secondary metastasis in the liver, and the patient was saved a further operation. In another patient a large epigastric swelling was similarly diagnosed as situated above the gall bladder, and was found to be a large hydatid cyst in the liver. In a third patient the gall bladder was seen flattened and compressed upwards by a tumour which proved to be in the transverse colon. The fourth case was similar, the gall bladder being compressed upwards by a growth in the colon. In the last case a hydronephrosis was responsible for displacing the gall bladder and also rotating it into a horizontal position.

Their conclusions based on this experience were, therefore, that cholecystography was of distinct practical value. The absence of a gall-bladder shadow was strong evidence of gross disease. A good shadow excluded gross disease, but could not be expected to give evidence of minor pathological changes. In jaundiced patients the investigation was of no value, though in their experience it was devoid of risk. Lastly, cholecystography was of considerable assistance in the differential diagnosis of abdominal tumours.

Dr. J. W. MCNEE (London) said he would first deal with recent advances in knowledge of the biliary secretion which normally passes along the bile passages, and with the changes met with in this secretion in disease. It would be remembered that the normal constituents of the bile were water, the pigment bilirubin, the bile acids and their salts, free cholesterol, and a small amount of mucin. In inflammatory disease of the bile passages other constituents, derived from the inflammatory exudate, were present and played an important role in certain end-results, such as the formation of gall stones. The most important of these constituents were, perhaps, the salts of calcium. In considering the biliary secretion in relation to disease it was necessary to remember the great differences between bile as secreted into the intrahepatic bile passages and bile as found in the gall bladder. Professor Graham had referred to the two main functions of the gall bladder—namely, the regulation of the pressure in the biliary passages and the absorption of water. Rous and McMaster had shown that, in the dog, the bile in the gall bladder was concentrated down to roughly one-tenth of its original bulk. The average power of concentration of the human gall bladder was not known, nor had the degree of concentration at which some of the constituents of abnormal bile were almost at the point of precipitation been discovered.

The gall bladder, as was well known to surgeons, could be done without; but it was ridiculous to describe it as a rudimentary organ on this account, or because certain animals had no gall bladder. It would be as logical to describe the spleen, the greater part of the stomach, the large intestine, or even an arm or leg, as rudimentary organs, on the basis of a similar argument. Since too little was known of the functions of the gall bladder, he would put in a word against its surgical removal in the absence of adequate proof that it was diseased and was not recovering.

GENERAL DISCUSSION.

Dr. F. A. Knott (London) said that during the past three years he had made, with Dr. J. F. Venables, slightly over three hundred examinations of specimens obtained by the Einhorn tube. They had particularly followed up those which were surgically proved or clinically almost certain cases of gall-bladder disease, and a few facts from an analysis of this short case series might therefore serve to illustrate the clinical value of this type of test.

It was not necessary to describe the various abnormal elements in duodenal specimens, such as leucocytes, crystals, pigment granules, detached epithelial fragments, and bacteria; but he emphasized the necessity for examining a series of upper alimentary specimens rather than the duodenal contents alone. This series should include the saliva, gastric resting juice, final gastric washings, and the duodenal contents before and after the administration of magnesium sulphate; in this way changes were more readily noted. The speaker thought that in practice it was essential that, after the resting juice had been obtained, the stomach should be thoroughly washed out with distilled water before the tube was passed into the duodenum. In the same way the duodenum should be washed out before obtaining the free flow of bile which was ultimately produced by the magnesium sulphate. This technique tended to reduce contamination and to make the individual specimens more definitely representative.

In routine work one other important point arose. It was not always practicable to confirm the exact position of the tube by *x* rays; they rarely had the chance to do so. But it was suggested that the results obtained had shown that much clinically useful information could be obtained without this *x*-ray confirmation. They had noted the following points when deciding the position of the tube. When the end was truly in the duodenum they found (1) a sudden change in reaction of the samples withdrawn; (2) their bulk was very much less; (3) swallowed water could *not* immediately be withdrawn via the tube; (4) the physical characters and appearance of the duodenal specimens generally differed markedly from the gastric samples; and (5) the typical flow of dark bile after magnesium sulphate was obtained only when the tube was in the duodenum. Admittedly the ideal procedure was to confirm the position by *x* rays, but if the above conditions were fulfilled the samples might be accepted as satisfactory. In all cases specimens containing food debris or any number of squamous epithelial cells were discarded. Taking these precautions, the speaker and Dr. Venables had examined samples from 71 cases of certain or very probable gall-bladder disease. These cases might be divided into two groups—the first contained 25 cases of gall stones, and the second 46 cases of cholecystitis. In the first, 20 cases were proved to be gall stones at operation, and 5 gave histories of typical gall-stone colic, and from radiological appearances and the van den Bergh reaction were judged to be certain cases of gall stones. In this series only 12 per cent. gave normal duodenal contents after magnesium sulphate. Otherwise 56 per cent. contained either cholesterol crystals or pigment granules, 36 per cent. contained leucocytes or abnormal epithelial debris, 40 per cent. produced pathogenic strains of coliform bacilli, one case the *B. typhosus*, and one *Streptococcus viridans*. In the second series of 46 cases which were considered to be cholecystitis, only 22 per cent. gave normal specimens after magnesium sulphate. In this case 13 per cent. showed crystals or pigment, 26 per cent. contained leucocytes or epithelial fragments, and from 42 per cent. they had obtained coliform bacilli. *B. typhosus* occurred once, streptococci once, and *Staphylococcus aureus* once.

These figures suggested that in practice clinically useful information might be obtained in the cases by the use of the Einhorn tube. With regard to the suggestion that the low gastric acidity predisposed to biliary tract infection, Dr. Knott had noticed that their series did not support this very strongly, as low values were recorded in less than 25 per cent. of these cases. Coliform infection appeared to be much more frequent than micrococcal. In fact, if no coliform bacilli appeared until the bile containing specimens were reached and the gastric acidity had been found to be normal, then it seemed that serious consideration must be given to the possibility of biliary infection. In examining normal duodenal contents in persons with normal gastric acidity they had found that over 75 were not infected. Dr. Knott had found experimentally that it was possible to sterilize lightly infected bile with very small amounts of urotropine, provided that the tubes were kept at blood heat and that the organisms, continuing at first to multiply, tended to produce acid in their immediate vicinity. At the time it seemed possible that another factor must come into play in producing this sterility—namely, the lowered surface tension, which allowed more effective action by the small amounts of antiseptic present. He had noticed, therefore, with great interest that recently Frobisher in America had been testing the effect of lowered surface tensions upon living bacteria, and had observed that a reduced surface tension was definitely inimical to the growth of many organisms. This was in accord with Dr. Knott's own results, which suggested that antiseptics were somewhat more effective when acting in a medium such as that which bile provided. This did not explain why, experimentally, urotropine was found to be a more effective biliary antiseptic than salicylates. The difference here seemed to arise from the fact that sufficient concentration of salicylate could not be produced in the bile without the appearance of general toxic symptoms, whereas a sufficient concentration of urotropine could be obtained if it was given in the way that Dr. Hurst had already explained.

Professor D. P. D. Wilkie (Edinburgh) considered that cholecystography had already taken its place among the standard methods of diagnosis, but that no finality or perfection had yet been reached. The greater certainty of the intravenous method had led some to persevere in its use to the exclusion of the oral method. The necessity for freshly prepared solutions and meticulous care in injection could not be too strongly emphasized if unfortunate general and local reactions were to be avoided. The immunity of the male sex from symptoms following injection, compared with the female sex, was noteworthy, and possibly of some significance in relation to the comparative immunity of the male from biliary disease. There was no more striking vindication of the importance of physiological research and the experimental method in relation to medical and surgical problems than the work in recent years on the biliary apparatus. The researches of Meltzer and Lyon on duodenal intubation; of Rous and McMaster on the functions of the gall bladder and ducts; of Rosenthal and of Rowntree on liver function tests; of Aschoff and McNee on jaundice and the reticulo-endothelial system; and, finally, of Graham and his assistants on cholecystography, formed a remarkable record of scientific advance the full significance of which was not yet realized or appreciated.

The exact nature of the gall-bladder function was not yet fully known. The experiments of Dr. Kodama suggested that it played a more purely mechanical role than some had believed. When an organ possessed a muscular coat and was richly supplied with nerves there was strong presumptive evidence that it took more than a passive part in functional processes. The work of Dr. Graham and his associates had also cast doubt on the presumed predominance of the sphincter of Oddi in relation to the physiology and pathology of the biliary tract. They would await with keen interest further evidence on the question of whether they were to recognize for the pars duodenalis of the common bile duct a primary part—namely, a definite measure of independent action and initiative—or merely a secondary role dependent on the peristaltic activity of the duodenal wall. That it must work in harmony with duodenal peristalsis was but natural, and the proving of this did not *ipso facto* preclude the possibility of independent sphincteric function under nerve control.

In cholecystography they had the means of studying the function of the gall bladder and its behaviour under various conditions, as had never been the case before. As experience with the method increased they might be able to recognize kinetic changes in the early stages of biliary

glycogen, in protecting the liver cells from many poisons were already well known. Whipple and Hooper had shown that sugar also had a definite effect in assisting and increasing the excretion of bile pigment.

Dr. T. Izod Bennett (London) dealt with the three great questions which presented themselves to the physician when confronted by signs suggestive of gall-bladder disease. The first of these was whether the evidence of gall-bladder disease was definite. Textbooks asserted that gall stones were chiefly found in fat fertile females of 55, but good aphorisms made bad diagnoses, and they all knew that gall stones were sometimes found in thin males and in quite young and seemingly healthy women, so that physical appearance was of little help. Further, it was known that the symptomatology of cholecystitis and of biliary calculus was immensely varied, ranging from sharp attacks of colic with jaundice to slight feelings of general malaise or even no symptoms at all. On rare occasions it was possible to see a swollen gall bladder through the abdominal wall, or to palpate it, or even to hear with a stethoscope the grating of the stones within it, but usually physical signs were conspicuously absent. While recognizing the value of right scapular pain, of pain below the costal margin together with flatulence, of pain at the right side of the lumbar vertebrae as suggesting gall-bladder disease, it must be realized that these were suggestive rather than decisive. Of the various physical signs, the one most constantly present and of the greatest diagnostic value was the presence of tenderness to pressure below the right costal margin when the patient was examined in the upright position.

The rather unsatisfactory state of the clinical methods of examining these cases had been completely changed by the introduction of cholecystography, and Dr. Bennett did not think it was yet sufficiently recognized in the profession that it was now a comparatively simple matter to obtain precise information in nearly every case. Thanks to Dr. Graham and his colleagues, they had reached a new stage in their knowledge, and the speaker did not hesitate to say that no examination of the biliary tract could be looked upon to-day as complete unless it included *x*-ray films taken before and after the administration of a suitable dye. In his private practice and at the Middlesex Hospital he had, during the last eighteen months, had the opportunity of seeing a very large number of these cases, and the results of examination had been most satisfactory. They had employed the oral method almost exclusively; not from fear of toxic general symptoms so much as from the risk of occasional venous thrombosis following slight extravasations. Admittedly such should not occur, but, in routine hospital work, such accidents might occur if intravenous injections were given, and a purely diagnostic test which involved such risks was not without grave disadvantages. The difficulties of the oral method were purely those of obtaining a capsule which would be dissolved in the intestine after passing the pylorus unchanged. Variations in the strength of the gastric and pancreatic juices in different individuals were bound to cause trouble in some instances, but the speaker's last fifty cases had been almost uniformly successful, nor had general toxic symptoms ever been grave. Without for a moment doubting his personal results with the intravenous method, Dr. Bennett felt sure that Dr. Graham had not sufficiently stressed the risks of local damage due to extravasation, and he believed that the intravenous method would only become universally applicable when a substance was introduced which was both opaque to *x* rays and devoid of risk when slight leakage occurred. The second question before the physician was whether the disorder in the biliary tract was permanent or only of a temporary nature. Here again cholecystography was proving of the greatest service, enabling them to watch the progress of cases under medical treatment. Dr. Bennett had seen cases in which the emptying capacity of the gall bladder seemed to improve considerably under treatment, but gross distortions and mottling of the shadow appeared to be always indicative of permanent damage. There was always the further question as to the severity of hepatic change which might have been produced. Here they must bear in mind the fact that it was probably impossible for infection of the biliary apparatus to have occurred without the liver itself having been subjected to considerable strain during the excretion of bacterial or other poisons. Laboratory tests of hepatic efficiency were still somewhat elementary, or, rather, the immense reserve power of the liver prevented them from demonstrating hepatic damage by laboratory methods until the disease had assumed formidable proportions. The speaker had recently been working with bromsulphalein as introduced by Rosenthal and White. This dye appeared to be absolutely without dangers when given intravenously, and its retention in the blood plasma when a liver was seriously deranged was easily demonstrated and measured. Dr. Davies, in the Biochemical Department of the Bland-Sutton Institute of the Middlesex Hospital, had had promising results with the introduction of certain sugars as tests for hepatic efficiency, but it must be admitted that all these tests at present demonstrated liver disease later in its evolution than they could wish. In earlier cases more useful information could be got by bacteriological examination of bile recovered by means of a duodenal tube; and it was interesting to remember that this was the original application of duodenal tubage. It was possibly its most useful application even to-day.

Turning to the last question before the practitioner, they came to the problem of treatment. Dr. Graham had probably done more to enable patients with biliary tract disease to escape operation than any other surgeon. That was one reason why they welcomed him so warmly. In the absence of stone and gross infection, cases of gall-bladder disease did exceedingly well with medical treatment. Dietetic treatment was very important, but if they thought that by diet they were going to alter the blood cholesterol they were falling into error. The work of Campbell, fully confirmed by unpublished researches in the biochemical laboratories at the Middlesex Hospital, showed that the supposed hypercholesterolaemia of most of these cases was largely a myth. Jaundice and chronic parenchymatous nephritis were the two states which commonly gave rise to an increased blood cholesterol content, and the relief of biliary obstruction would at once reduce the blood cholesterol to normal, independently of the diet. The important dietetic principles in biliary tract disorders were: (1) to give a diet of carbohydrates and vegetables which would improve bowel evacuation and throw a minimal strain on the liver, and which would also combat tendencies to obesity; (2) to give water in abundance; and (3) to utilize such foods as would promote biliary drainage. As regards water drinking, Dr. Bennett was sure that it was of the highest importance. Natural waters with a rather large salt content were usually better than purer waters; normal saline was, he believed, an excellent drink for these patients. The food which most readily provoked emptying of the gall bladder was egg-yolk, and he was trying the effect of giving beaten raw egg-yolk to his patients daily. As to drug treatment, he was convinced that magnesium sulphate in solution, taken on waking, when the stomach was quite empty, was very useful; he did not use Lyon's method of injecting it through a duodenal tube. He believed there was some risk in repeatedly applying such strong solutions to the duodenal mucosa, and he was sure that, given by the mouth, it was easier, devoid of all risk, and equally effective. Bile salts and urotropine were the other drugs which were useful, and these he prescribed in full doses. His experience was that by these methods most satisfactory results could be obtained in a very considerable proportion of cases.

Dr. J. H. Anderson (Ruthin) described the results obtained by the use of cholecystography at Ruthin Castle in about fifty cases. The method of administration had varied; at first the dye was given intravenously, but now the oral method was used almost exclusively, being given in salol-coated pills, though in three instances a simple solution was used, as the patients stated that they were unable to take pills of any kind. Comparing the oral and the intravenous method, his experience confirmed the results of previous observers, that at present the intravenous was perhaps more accurate as the dye was more under control; but the oral method was sufficiently

At the Annual Meeting of this Association two years ago the newer views on the formation of bile pigment in the body had been discussed. This pigment was derived from haemoglobin, and it might be supposed that the amount of the pigment excreted in the bile was dependent on the amount of blood destruction, provided that the parts of the liver concerned with bile pigment metabolism (Kupffer cells and the glandular cells) were functionally intact. There was considerable indirect clinical and experimental support for this simple view—as, for example, the relative frequency of deeply pigmented gall stones in young patients with acholuric jaundice, and the excessive excretion of thick dark bile (pleiocholia) in animals after the injection of blood-destroying agents But other experiments in animals were by no means conclusively in favour of such a simple mechanism. Whipple and Hooper had found very variable results, with no constant increase in the bile pigment, in dogs after injection of large amounts of haemoglobin. These investigators, studying healthy dogs with a biliary fistula, found that on a mixed diet the average daily excretion of pigment was very constant; a large dose of sugar, either by the mouth or intravenously, caused at once a very definitely increased output of pigment lasting for several hours; other carbohydrates acted in the same way. Raw meat, on the other hand, brought about a constant diminution in the amount of pigment excreted. From their experiments Whipple and Hooper had suggested that these facts might upset the accepted theory that bile pigment was only formed when blood was destroyed, but Dr. McNee did not agree with their view.

Numerous attempts had been made to evolve suitable methods of estimating bile acids in health and disease, but at present no satisfactory technique was known. It was inevitable that the presence of increased or of diminished amounts of bile salts would alter enormously the physical properties of the bile. It might even be that the key to many important biliary diseases would be obtained when suitable methods were available. From his own observations Dr. McNee had found that in obstruction of the biliary passages the earliest secretion of the liver to stop entirely was that of the bile acids. As a rule they soon disappeared from the blood and urine when biliary obstruction was complete, whereas bile pigment might pass out in the urine for many months without interruption.

Dr. McNee next dealt with the role of cholesterol in health and disease. There was one controversial point in connexion with the cholesterol content of the bile which was important. Naunyn still believed that cholesterol was actually secreted into the bile from the wall of the gall bladder and biliary passages, but most observers were now opposed to this view, and the speaker thought that from all the experimental evidence available it might safely be assumed that the cholesterol in the bile was derived from the blood plasma by transference through the liver cells. Recent work by Gardner and his associates, by Landau and the speaker himself, had shown that the cholesterol esters of the blood plasma were changed to free cholesterol during their passage through the liver, and that the free cholesterol, when it reached the intestine with the bile, was again absorbed as cholesterol esters. There appeared to be a very conservative metabolism of cholesterol, so that little escaped from the body; what loss occurred was easily made up by absorption from the food, as Gardner had shown. All animal experiments in which the cholesterol ester content of the blood was artificially raised showed at once an increased cholesterol output in the bile. The same fact could be demonstrated in man; and in 1913 Dr. McNee had shown that in pregnancy, during which an increase in cholesterol in the blood was the rule, the same occurred in the bile. He believed that the cholesterol esters in the blood plasma were derived by absorption from the food. French writers had suggested that the suprarenal cortex and the corpus luteum of the ovary were to be regarded as important producers of cholesterol esters for the body. Hurst appears to have accepted this second view without considering the many experimental facts against it. Landau and McNee, after much experimental work, had rejected the French view entirely, and concluded that the suprarenal cortex and corpus luteum were mere depots and not producers of cholesterol esters. Every experimental increase or decrease in the cholesterol ester content of the plasma was at once reflected in the cholesterol content of these two organs.

With regard to disease of the biliary tract, it was generally agreed that infection of the gall-bladder wall with organisms, as in acute and chronic cholecystitis without calculi, was a common disease and one more often missed than recognized early. By infection was meant a condition associated with definite inflammatory changes in the walls of the gall bladder. The mere presence of organisms in the bile was quite insufficient for such a diagnosis. In all experimental blood infections in animals and in prolonged bacteriaemias, such as infective endocarditis, the capillaries of the liver shared with the lung capillaries and the splenic pulp the chief role in removing micro-organisms, and no doubt many living organisms passed out through the bile without harming the biliary tract. It was evident that there were other important factors concerned in the etiology of real cholecystitis. Professor Graham had referred already to the probability of lymphatic infection, and he and his colleagues had done very interesting work in connexion with this and the resulting hepatitis. Stasis of the bile had been in the foreground as an etiological factor for many years, and the speaker thought its position was justified. Recently a new conception had been introduced by the work of the Swedish surgeon Berg of Stockholm, who, from a series of extensive observations on the extrinsic bile passages, had concluded that the form, position, and even the extent of development of certain valves, varied enormously in different biliary tracts and gall bladders, and that therefore certain types of gall bladder were far more prone to stasis and partial obstruction or imperfect emptying because of their anatomical peculiarities. This was a matter of particular interest to surgeons.

How were acute and chronic cholecystitis, without gall stones, to be recognized? The clinical picture might be difficult to interpret and might closely resemble duodenal ulcer, not only in the symptomatology but in the results of examination of the gastric contents. Duodenal drainage might help to some extent, but the speaker felt sure that the correct use of the dye technique introduced by Professor Graham would be recognized as of enormous aid to the clinician. What were the effects on the biliary secretion of cholecystitis, including with it cholangitis, and, as a result of Professor Graham's work, hepatitis also? The bile received, in addition to its usual constituents, all the products of the inflamed gall-bladder wall—an excess of mucin, dead cells and their debris, many of them containing myelin droplets of cholesterol, and last, but not least, calcium salts. The quantitative changes in the biliary constituents during cholecystitis were not known, but quite probably during the acute inflammatory period little new bile entered the gall bladder, and changes were mainly exerted on the bile already there. Precipitation certainly tended to occur, and in that way gall stones might have their beginning.

Many acute infections of the gall bladder must heal altogether. Others died out more slowly, as they could infer from the presence of aseptic bile in pathological gall bladders containing stones. What kept up the inflammatory reaction, and how it should be dealt with apart from surgery, were problems for the future. Dr. McNee could not believe that dietetic treatment was of great value in the prevention of gall stones. While giving an adequate although modified diet, he saw no way of cutting off the small amount of cholesterol that the body needed to replace wastage from the cholesterol metabolism. The metabolism of cholesterol in the body was as conservative as iron metabolism, and it would be almost as logical to try to cure erythraemia by removing the iron in the food required for haemoglobin. The only aim at present must be the prevention of additional damage to the bile passages in patients where this was believed to have occurred. Whether the use of urotropine in large doses, or non-surgical drainage by the Lyon technique, would yield good results in future, was not known. At present the only reliable curative method was surgery. It was important to give ample glucose when possible in diseases of the liver and bile passages. The effects of glucose, when stored as

elapsed between the first positive test and the two subsequent negative tests. The tedious and laborious nature of these investigations, and the long intervals which must elapse in trials of this sort, will, I hope, justify the publication of only three cases in support of the above proposition.

Chart 1 was obtained in the case of a young man whose general health was reasonably good; the complaint for which he sought advice was a persistent, slightly painful, obscure affection of the wrist, apparently of no great importance so far as his general health was concerned. The decided positive constitutional reaction unexpectedly obtained led on careful physical examination to the discovery of slight but distinct physical signs at the right apex. Further importance was given to these facts by a history that the patient had suffered a few years previously from a run-down condition accompanied by a persistent cough, which was thought by his medical attendant to have "touched the lung," although a few months' residence in the country appeared to have re-established his health satisfactorily and cleared up the signs.

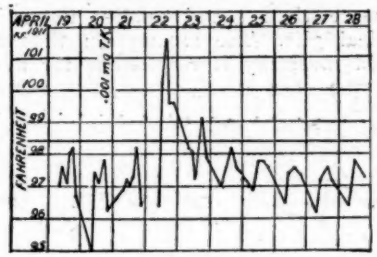


CHART 1.

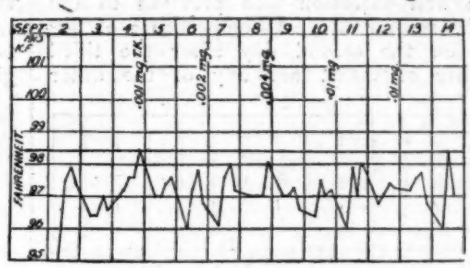


CHART 2.

Acting on the assumption that this man harboured a tuberculous focus which for the time being was causing no disease in a clinical sense, a wide view was taken of the situation, and thorough treatment, specific and otherwise, was carried out for a period of twelve months. The specific treatment consisted in the subcutaneous injection of progressively increasing doses of Koch's bacillary emulsion, beginning with approximately 0.001 mg. and ending, in the course of about eleven months, with 4 c.cm. B.E. (= 20 mg. solid substance), and carried out more or less in accordance with Koch's final directions for this treatment. The remainder of the treatment was ordinary general care at home. A period of seventeen months from the conclusion of specific treatment having been allowed to elapse, the second test was undertaken for the purpose of comparison, when the completely negative Chart 2 was obtained.

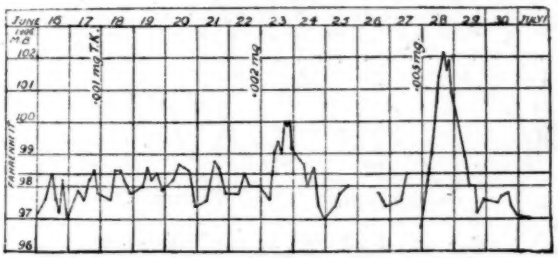


CHART 3.

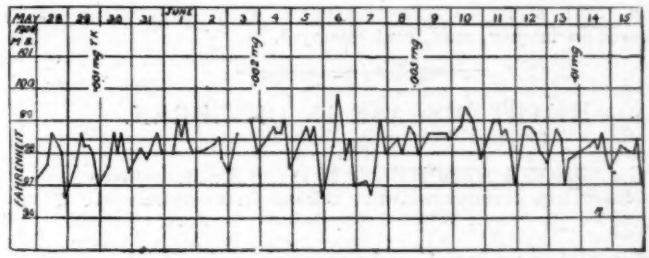


CHART 4.

Only when a complete explanation of the meaning of the tuberculin reaction is established will the full significance of these two charts in the medical history of this individual be appreciated. The view to which I adhere, but which for the time being I am not critically discussing, is that at the time of the first chart this patient was suffering from latent tuberculosis, probably at the site indicated by the physical signs, and possibly elsewhere, causing no distinct appearance of bodily ill health, but implying the presence of living tuberculous tissue in active relation with the body fluids, and capable of extension; while at the time of the second chart the negative result indicates that such living tuberculous tissue had been obliterated. That is to say, the tubercle bacilli formerly present and causing the usual alterations in the living tissue at the time of the first chart had, by the time of the second, either been destroyed, or so encapsuled by fibrous or calcareous bounds as to be to all intents and purposes outside the body or out of organic relationship with it.

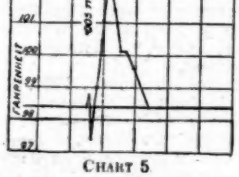


CHART 5

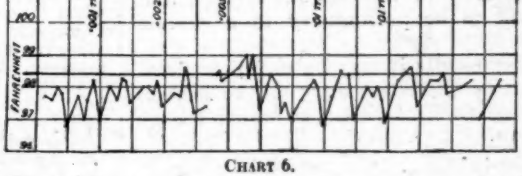


CHART 6.

The same sequence of events is illustrated by Charts 3 and 4. The patient in this instance was a member of a family of which one sister was suffering from chronic pulmonary tuberculosis. The patient herself had drifted into a run-down condition accompanied by persistent cough, which, especially owing to a knowledge of her sister's disease, was giving rise to some anxiety. The tuberculin test, which gave hardly a trace of reaction to the first injection (0.001 mg. T.K.), gave a distinct reaction to the second (0.002 mg.), and a pronounced reaction to the third (0.005 mg.). No physical signs were discovered in the chest, but, as before, importance was attached to the test; constitutional and specific treatment was carried out, the maximum dose on this occasion being 0.4 c.cm. (2 mg.), and after an interval of fourteen months from the conclusion of specific treatment the test was repeated, with the negative result shown in Chart 4.

While the temperature record in Chart 4 is not entirely below 98.4°, it is to be noted that the time covered by the later part of the chart was pre-periodic, that event occurring on May 14th. Further, the record of 99° on June 1st was on the third day after the injection; the record of 99.8° on June 6th was also on the third day; that of 99.4° on June 10th was on the second day, and the full test dose of 0.01 mg. on June 13th was followed by still less appearance of disturbance.

Here again the assumption is that in June, 1906, this patient harboured tubercle bacilli in organic relation with the body tissues and fluids, capable of development, and entailing danger of the development of disease similar to that of her sister, while by May, 1908, this condition had been obviated and no such danger remained.

One more example of the same sequence of events is presented. Chart 5 shows a sharp reaction to a medium test dose of 0.005 mg. In this case there were no distinct focal signs of disease, although there was certainly a depressed general condition of health. As in the other cases, enough importance was attached to the result of the test to cause steps to be taken to eradicate the infection indicated, which steps consisted in the administration of B.E. up to a maximum of 4 c.cm.

Chart 6 shows the result of a test undertaken after a period of thirteen months from the conclusion of treatment. Here the dose, which had previously caused a sharp reaction with a temperature of 102.6°, resulted on March 28th in a

accurate for routine use, besides having certain definite advantages. The possibility of pills remaining unabsorbed or being vomited was checked by a screening of the abdomen and radiological examination of any vomit. The dyes used had been the sodium salt of tetrabromphenolphthalein and tetraiodophenolphthalein prepared by Mallincrodt of St. Louis, and in a few cases the sodium salt of tetraiodophenolphthalein prepared by Martindale of London; in all cases solutions were prepared a few hours before use and pills not more than ten days. Ill effects had been insufficient to cause any alarm, and in 20 per cent. of cases there was no reaction at all. In the oral cases the unfavourable sequels were limited to nausea, vomiting, and diarrhoea. Nausea was transient as a rule, but had once lasted for ten hours in a case where the gall bladder did not fill, and where three stones were found at operation. Vomiting was never severe and never exceeded three times. The largest vomit was in a case where the dye had been dissolved in 60 c.cm. of water. In no case was the vomit stained with the dye. For some time all vomits were x-rayed as a routine, and their density was compared with an equal thickness of tap water as a control, but without detecting the presence of any dye. Diarrhoea was limited to two or three loose motions and was never severe. No indication could be found to show which patient would have a reaction and which not. The impression gained was that the reaction was more likely to occur when the dye was old and in patients whose liver function was impaired. In no case had the test been omitted because of the general condition of the patient, and their experience as to ill effects was contrary to that expressed recently at a discussion in London. In practically all cases a small barium meal had been given at twenty-four hours; one film was taken with the patient lying on the left side and the tube in front of the patient working horizontally. In this way information was obtained as to pressure effects of the gall bladder on neighbouring hollow viscera and the mobility of the gall bladder was ascertained. With cholecystography they could determine in at least 90 per cent. of cases whether the gall bladder was healthy or not. There were some border-line cases, and only time and experience would settle the group into which these cases would fall.

Dr. Anderson showed slides to illustrate some findings confirmed by operation; in all cases the dye was given by the mouth.

Sir Berkeley Moynihan (Leeds), in congratulating Professor Graham on the great advance that had been made by the introduction of cholecystography, said that in their hands examination by Graham's method had given accurate results in 92 per cent. of cases. He disagreed with some of the observations as to the value of estimating the cholesterol content of the blood. In their early experience they found that as a rule in cases of cholelithiasis there was an increased amount of cholesterol in the blood; 85 per cent. of cases showed an amount above the mean normal, 65 per cent. over the high normal, and 2 per cent. an amount below the low normal. The presence of hypercholesterolaemia, especially when cholesterol crystals were found in the bile extracted from the duodenum, appeared to have a certain diagnostic value. In the last series of 81 cases they had extended their inquiries. They had examined both the cholesterol and the calcium content of the bile, the blood, the gall-bladder wall, and the stones; they had taken into close consideration the stage which the associated pathological conditions in the gall-bladder wall and in the stones themselves had reached. A short interval only elapsed between the examination of the patient's blood before operation and the examination of the gall bladder and its contents.

There was a clear difference between the conditions found in the early stages of cholelithiasis and those found in the late stages. In the early stage an excess of cholesterol was found in the blood, in the bile, and in the gall-bladder wall; there appeared to be a cholesterol "flood" or "high tide." The gall bladder had the property of abstracting cholesterol from the bile, which was heavily charged with it. If the gall bladder was removed early it might present the "strawberry" appearance which he had described twenty years ago. This appearance was due either to a deposit of cholesterol crystals on the mucosa or to an excess of lipoid in the wall of the gall bladder. If this state continued, and if it was preceded or accompanied by infection, the formation of gall stones occurred. These consisted at first almost entirely of cholesterol, as both chemical and radiological examination would prove. In a later stage of the disease, when the stones had caused injury to the gall bladder, which showed evidences of thickening and fibrosis, the conditions were changed. The flood of cholesterol had passed; the high tide was then followed by a low tide. There was no longer an excess of cholesterol in the blood, for the gall bladder, because its mucosa was destroyed, had lost its power of abstracting it from the bile. The chronic irritation of stones had caused the appearance of calcium in the bile, in the gall-bladder wall, and in the blood. Hypercholesterolaemia was changed for hypercalcaemia; and the stones removed from the gall bladder contained calcium. It was interesting to note that a large proportion of private cases fell into the early group, whereas a large proportion of hospital cases occupied the later group. If this view was correct, that the gall bladder extracted cholesterol from the bile, then removal of the gall bladder in patients with hypercholesterolaemia should result in a considerable reduction of the amount of cholesterol in the blood. This they found, on examining cases of cholecystectomy at periods of six months or more after operation, was invariable.

Sir Humphry Rolleston (Cambridge) referred to the possibility that although the normal gall bladder might have little, if any, function in the direction of contraction, it might so operate when it was the site of chronic inflammation and accompanying muscular hyperplasia of its walls. He suggested that the good clinical effects following the use of a diet in which cholesterol-producing foods had been reduced to a minimum might be due to some factor other than the cholesterol content. He was not optimistic enough to believe that medical treatment would be able, at any rate for a long time, to eliminate the need for cholecystectomy.

Professor Evarts Graham, in reply to a question as to the occurrence of "bad arms" at the site of injection, admitted that cases of thrombophlebitis were occasionally seen; he applied heat at once if pain was present. Such cases, however, were rare in skilled hands, and with a new preparation that he was now trying he hoped they might be rarer still.

THREE CASES OF CHANGED REACTION TO TUBERCULIN FROM POSITIVE TO NEGATIVE.

BY

ROBERT CARSWELL, M.A., M.B., Ch.B.,

WANDSWORTH.

In the literature of tuberculin comparative charts of the reaction before and after treatment are rare; indeed, specimens of negative charts alone are not common, owing no doubt to the widespread prevalence of latent tuberculosis making it comparatively uncommon to obtain negative reactions in practice. If it can be shown that a positive general reaction can be converted by specific treatment into a negative reaction, after a sufficient interval of time has been allowed to elapse to eliminate the immediate effect of tuberculin immunity, an important step will have been taken towards a valuation of the tuberculin test comparable to that of the Wassermann test in syphilis, and the diagnosis and treatment of tuberculosis will become practicable in the very earliest stage of all—that of infection with minimum pathological changes. The following three cases point in this direction. In the first case it seems fairly clear that the specific treatment was responsible for the conversion of positive to negative reaction. In the second, immunization was only carried to 0.4 c.cm. bacillary emulsion (2 mg. bacillary substance); and in the third, which was carried to 4 c.cm. (20 mg.), a long period

9. Aged 9½. "In May, 1924, had chorea with a mitral murmur, and in October, 1924, the murmur was still present." Complains of pain over the heart. Dislikes milk, but is fond of vinegar. Tonsils and glands enlarged; nodule on right shin; slight mitral murmur. Cardioscope 1—½.

10. Aged 13. "In March, 1925, had a mitral murmur." Dislikes milk, but is fond of sour things. Gums puffy; marked mitral murmur. Cardioscope 1—.

11. Aged 11. Stated to have "had anaemia in 1921 and chorea in 1924 with a coarse first heart sound. In February, 1925, heart normal." Takes no milk. Bites nails; gums puffy; no murmur. Cardioscope 1—½.

12. Aged 9. Had chorea in February, 1925. Dislikes milk; gets poor food. Wassermann reaction positive. Tonsils enlarged; adenoids present; keratitis; no murmur. Cardioscope 1—½.

13. Aged 12. Is stated to have had chorea in November, 1923, with enlarged tonsils and sinus arrhythmia, and in March, 1924, chorea with mitral murmur. In October, 1924, the murmur was still present. Takes no milk, but is fond of vinegar. The heart is enlarged with a mitral murmur. Cardioscope 1—.

14. Aged 13. Is subject to colds; food bad; hopeless mother; another child has chorea. The thyroid is enlarged. Murmur all over the cardiac area. Cardioscope 1—½.

15. Aged 11. In April, 1925, had slight chorea. Dislikes milk. Is always restless; has growing pains; bites nails; gums puffy; no murmur. Cardioscope 1—1.

16. Aged 14. In December, 1923, had operation for right mastoid disease. Dislikes milk. Gets pallid when excited; gums bleed; fond of vinegar; no murmur. Cardioscope 1—½.

17. Aged 12. Does not like milk; fond of vinegar, and "will empty the bottle." Has slight tremors; gums puffy; marked mitral murmur. Cardioscope 1—.

18. Aged 12. Takes no milk. Has chorea; gums inflamed; tonsils enlarged; bites nails; no murmur. Cardioscope 1—½.

19. Aged 15. Had otorrhoea in 1921 and rheumatic fever in 1924. Takes no milk, but is fond of pickles and vinegar. Bites nails; heart enlarged; mitral murmur. Cardioscope 1—½.

20. Aged 12. Easily fatigued. Dislikes milk, fond of pickles and vinegar. Heart impulse diffused. Cardioscope 1—.

21. Aged 13. Has been "lackadaisical all her life." Does not like milk; is fond of pickles. Complains of pains over abdomen; bites nails; mitral murmur. Cardioscope 1—½

22. Aged 11. Mother says "she always wants to sit over the fire and is a terror for vinegar." Gums puffy; poor pulse. Cardioscope 1—1.

23. Aged 11. Had rheumatic fever in 1923. Gets pains in joints when it rains. Takes no milk; is fond of sour things. Tonsils and thyroid enlarged. Gums puffy; bites nails; mitral murmur. Cardioscope 1—.

24. Aged 13. Is weak and languid; faints when the hair is done. Takes no milk; is fond of vinegar. First heart sound rough. Cardioscope 1—½.

25. Aged 12. Had growing pains; very fond of meat. Gums puffy; bites nails; mitral murmur. Cardioscope 1—½.

26. Aged 13. Takes no milk. Has choreic movements. Gums pyorrhoeic; mitral murmur. Cardioscope 1—½.

27. Aged 12. Takes no milk; is fond of sauce and acid things. Has chorea; bites nails; tonsils enlarged; gums inflamed; marked mitral murmur. Cardioscope 1—.

28. Aged 15. Had chorea two years ago. Takes no milk; is fond of vinegar. Bites nails; gums puffy; mitral murmur. Cardioscope 1—½.

29. Aged 13. Sister of Case 28. Takes no milk; is fond of vinegar. Has chorea; gums puffy; bites nails; mitral murmur. Cardioscope 1—½.

These two sisters (28 and 29) have one other sister who is very strong. She, however, is fond of milk and does not touch vinegar.

30. Aged 11. Had rheumatic fever six months ago. Takes no milk; is fond of vinegar. Bites nails; mitral murmur. Cardioscope 1—.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

A CASE OF GAS GANGRENE IN LABOUR.

I WAS engaged to attend the confinement of a woman, aged 35, who had given birth seven years previously to a normal male child.

I examined the patient at seven months' gestation and found a vertex presentation and nothing abnormal. About two weeks before full term (December 3rd, 1923) I was sent for on account of pain in the right side of the abdomen. I was told that foetal movements had not been felt for about two weeks. The presentation was transverse. No foetal movements or heart sounds were obtained; there were no signs of labour. External version was tried, but failed. Quinine was given by the mouth, but no other attempt at induction of labour was thought advisable. On December 12th labour came on normally; the pains were slow.

Dr. Darwall Smith saw the patient with me and performed internal version and pulled down a leg. The foetal head was found to be soft, the skin was peeling off, and the smell of the child was very offensive.

On December 13th the baby was born after great difficulty, owing to the fact that its abdomen was very much distended with gas. Its general condition was very disorganized. There was some post-partum haemorrhage.

For the next few days the mother got on quite satisfactorily, but on December 16th she began to complain of pains in the left buttock and a small red patch was found at mid-day. At 8 p.m. on the same day it had spread, and I opened where I expected to find pus, but gas was obtained; a drainage tube was put well into the buttock. The inflammation spread very rapidly. Dr. Darwall Smith ordered quinine injections and suggested that the case had become one for a general surgeon. Mr. C. Frankau was called in on December 17th and removed the whole of the gluteal muscles on the right side. The patient died about two hours later.

The bacteriological report upon material from the buttock was: "Films showed large numbers of streptococci and Gram-positive spore-bearing bacilli. By aerobic cultivation both streptococci and the spore-bearing bacillus have been obtained. The later organism is highly pleomorphic; it has a marked tendency to variability on staining with Gram's method, and has a centrally placed spore. It gives rise to profuse gas formation in the cultures, and is strictly anaerobic. The organism is one of the gas gangrene type and is a member of either the *perfringens* or the malignant oedema group; its identity is not yet certain."

The question is: How did the patient become infected three to four weeks before full term? The only clue I can offer is that her husband had been badly wounded in France during the war and that some clothes had harboured the spores of these organisms.

Harrow. HAROLD E. THORN, M.B., B.S.

GENERAL PARALYSIS ASSOCIATED WITH BENIGN TERTIAN MALARIA.

THE unusual combination of diseases in the following case would seem to render publication desirable.

A retired ship's carpenter, aged 39, was admitted to the Kent County Mental Hospital on January 18th, 1926, with the signs and symptoms of general paralysis, and a history of malaria and heat-stroke. The blood and cerebro-spinal fluid were both reported completely positive to the Wassermann test. The patient was confused, quite disorientated, dirty in habits, with pronounced hallucinations, and very restless. By the beginning of April he had quieted down sufficiently for a course of Stärcke treatment to be begun, but before the fourth injection could be given he had again become very restless and troublesome, and the treatment had to be abandoned. There was then little change in his condition until August 1st, when he had two bouts of fever of 103° with one day intervening, when his temperature was subnormal. The blood was examined and benign tertian malarial parasites were found to be present. Fifteen typical rigors followed, with one or two atypical ones, and, as there was no improvement in his mental condition, quinine treatment was commenced. On September 6th the patient died, having previously developed retention of urine and multiple syphilitic sores.

The interest in this case would appear to lie in the fact that the patient had malaria of long standing and that general paralysis developed in spite of this; a further severe relapse of malaria in no way hindered the progress of the cerebral condition to a fatal termination.

I am indebted to Dr. Abdy Collins, medical superintendent, Chartham, for permission to publish the notes of this case.

GEOFFREY T. BAKER, *M.C.*,
Kent County Mental Hospital. L.M.S.S.A. and D.P.M.

FUNCTIONAL HAEMOGLOBINURIA.

IN view of the interest recently taken in functional albuminuria, the following case appears to be worth recording.

An officer, aged 19, who had recently arrived in Malta and who was not in good training, took part in a cross-country race on April 9th. A short distance from the winning-post he collapsed, and remained unconscious for over an hour.

I saw him in hospital the following morning. Apart from a headache and a sense of general weariness, he stated that he felt quite fit. His pulse was regular and not increased in rate, and there was no evidence of enlargement of the heart, nor were any adventitious sounds or alterations of rhythm detected. The only physical signs of disease which he presented were a slight rise of temperature and well marked haemoglobinuria.

He was kept at rest, and by April 12th the urine was normal in colour, but still contained albumin. By April 15th the albuminuria had completely disappeared, and did not recur after he was allowed to leave his bed and walk about. He was readmitted to hospital in July for typhoid fever, but on this occasion repeated examinations of the urine failed to reveal albumin.

It seems reasonable to assume that the haemoglobinuria in this case was induced by the excessive exertion and was merely a more advanced stage of functional albuminuria. Probably the same fatigue products which so affected his blood and kidneys were also responsible for the unconsciousness which overcame him at the end of the race, rather than that the latter symptom was the result of cardiac overstrain.

C. M. FINNY, F.R.C.S.,
Malta. Major R.A.M.C.

temperature of only 99°, without constitutional disturbance, in marked contrast to the previous result, while the other test doses of the series were followed by no temperature disturbance at all. This test was repeated twelve months later, with five-day intervals between the injections, instead of two as on the previous occasion (Chart 7).

On this occasion likewise there was nothing approaching a reaction; a temperature of 99.2° on June 3rd was on the fifth day after the first injection and previous to the administration of the second one. A temperature of 99° on June 10th was on the second day after the third injection, and neither of these, nor any of the other

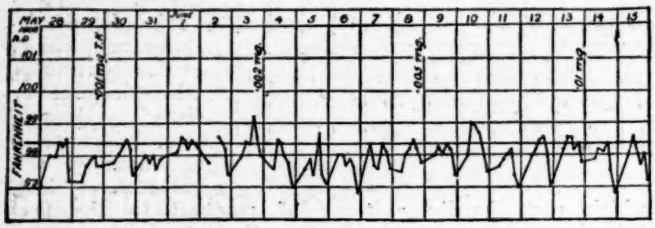


Chart 7.

injections, was accompanied by other than quite trivial symptoms.

The points intended to be brought out in this communication are the striking changes in reactivity to tuberculin in the above cases, together with the means whereby these changes were brought about, and the inferences to be drawn therefrom.

A positive general tuberculin test is a matter of very great practical importance as it is capable of revealing disease at a time when it can be comparatively easily dealt with, and when specific treatment with large doses of tuberculin is easy, safe, and effective.

HEART DISEASE IN CHILDREN.

BY

G. ARBOUR STEPHENS, M.D., B.S., B.Sc.Lond.,

CONSULTING CARDIOLOGIST, KING EDWARD VII WELSH NATIONAL MEMORIAL ASSOCIATION.

The results of an investigation into one series of 30 cases of heart disease in children are given in the hope that they will be of some service to those who are interested in this important subject. The cases were sent to the clinic with the object of allowing me the opportunity of determining to what extent there were certain conditions common to those children who were suffering from carditis.

From the accompanying case notes it will be observed that there is a marked liking for acids, especially vinegar, amounting oftentimes to a perversion of appetite. Together with this partiality for acids there is in many cases a great dislike for milk. The aggravation of the choreic movements said to take place in Case 1 after partaking of acids is very strikingly direct. Puffiness of the gums is also a very common factor pointing to a constitutional disturbance closely associated with the alimentary canal. Many of the children are in the habit of biting their nails—a habit indicative of an irritable state of the nervous system, and one which might be said to be preliminary to a choreic condition.

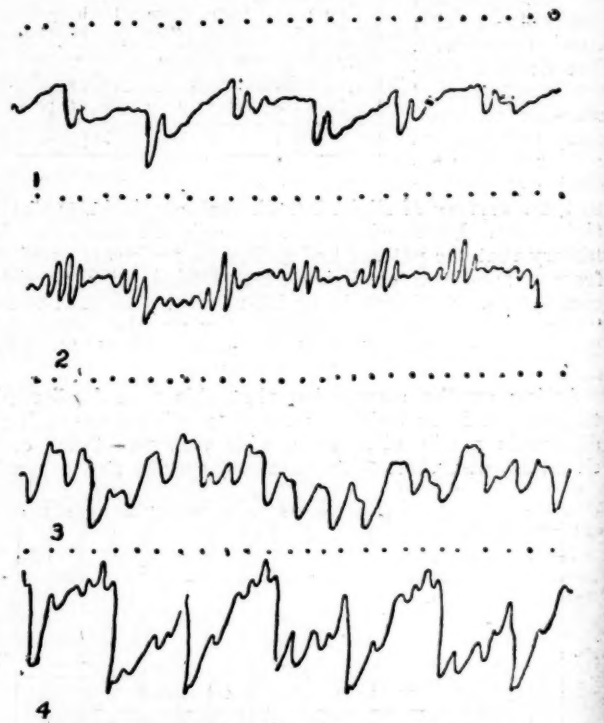
In connexion with these results it may be useful to draw attention to some statistics I collected from the schools under the Swansea Education Committee, of which I have the honour to be chairman.

No. of children examined	8,638
No. who disliked milk	944=10.9%
No. of nail-biters	3,154=36.5%
No. of acid takers	5,469=63.3%
No. of those whose gums bleed on cleaning	2,392=27.6%

Amount of milk available=0.34 of a pint per head of population.

It will be seen that the condition of a large number of these children can hardly be said to be satisfactory; in fact, such a large amount of nail-biting and gum-bleeding might be described as factors closely associated with a predisposition.

One item in the case notes—namely, "Cardioscope 1—½"—must be defined. The usual chest-piece of a stethoscope is barely an inch in diameter, and covers a limited part of the cardiac area. I use a chest-piece nearly 3 inches in diameter, and as a result I find the sounds in a healthy child almost of the same quantity, which I mark "1—1." When the second sound varies and the quantities are unequal, I mark them accordingly "1—½" or "1—¼" as the case may be. Sound quantity is much easier to estimate than sound quality unless the observer has a musical gift. The assumption that medical students are gifted musically is responsible for a wrong conception of



1. Taken with 1-inch receiver from patient sitting up.
2. Taken with 1-inch receiver from patient lying down.
3. Taken with 3-inch receiver from patient sitting up.
4. Taken with 3-inch receiver from patient lying down.

heart sounds on the part of medical men generally. The instrument with this large chest-piece I call a "cardioscope." That such a variation in size of chest-pieces produces different results the accompanying cardiographic diagrams amply testify.

Heart Cases Examined at the Clinic.

1. Aged 9. Had a fall in January, 1925, followed by a rash, and six days later by chorea. She is fond of acids and every time she takes any the chorea is aggravated. She dislikes milk. Left tonsil enlarged and chest narrow. There is no diaphragmatic breathing, and the heart is displaced outwards; no murmur. Cardioscope 1—½.

2. Aged 5. Tonsils enlarged, adenoids present, and a discharge from both ears. Can take milk, but is very fond of oranges. Heart thrill and mitral murmur present. Cardioscope 1—.

3. Aged 10¾. Is stated to have had chorea in November, 1924, when "the movements were slight and the heart sounds rough." Complains of pains and aches in legs and feels tired. Is fond of vinegar, lemons, and salt. The gums are puffy; there is no heart murmur. Cardioscope 1—½.

4. Aged 13½. In November, 1924, the first sound was stated to be "rough." Is fond of vinegar. Gums are puffy; he bites his nails; chest moves badly during respiration. After exercise the first sound is rough. Cardioscope 1—½.

5. Aged 8. When examined in July, 1924, and February, 1925, she is stated to have had a "loud systolic bruit." She gets no milk or proper food. Gums puffy; loud systolic murmur. Cardioscope 1—.

6. Aged 8. In 1922 had chorea and in 1923 had chorea and rheumatic fever. Takes no milk but is fond of vinegar. Complains of pains in legs. Bites nails; gums puffy; systolic murmur. Cardioscope 1—.

7. Aged 10. Stated to have had chorea in 1922, when "the first sound was coarse." "In July, 1924, heart normal." Is fidgety about her food. Gums puffy; tonsils and cervical glands enlarged; no murmur. Cardioscope 1—¼.

8. Aged 7. Stated to have had a "soft systolic murmur" in February, 1924, and March, 1925. Very fond of vinegar. Gums puffy; marked mitral murmur. Cardioscope 1—

baffling multitude of difficulties was subjected to an inquiry the work upon *him* was not rewarded in the only way in which scientific work could be adequately rewarded in this country—namely, by the bestowal of the Fellowship of the Royal Society. It was one of the saddest things to consider that all this work had been done, the whole face of medicine had been changed, and yet no surgeon in active practice to-day—and no physician—was a Fellow of the Royal Society.

The next point he wanted to make was that the mere craft of surgery was now hardly capable of any further advance. That was a difficult and might seem to be a rash thing to say, but he believed it to be true. If a series of operations were taken—for example, upon the Gasserian ganglion, or upon the stomach or gall bladder, or upon almost any of the organs inside the abdomen, it was really hardly possible for the operations to be much safer than they were now. It was certainly hardly conceivable that there should ever be seen in the whole history of the world greater skill than was shown by the most competent masters of the present time, or that there could be greater beauty of craftsmanship or more perfect execution. There was nothing more perfect in any craft or art than the work of the skilled surgeon. It was evident when one watched such a man that he exemplified, not only supreme devotion and infinite patience, but something like a complete dedication to a great ideal, which was finding expression in the labour of his hands at the moment.

A word of caution was necessary. There was a good deal of bad surgery done, not only in this country, but throughout the world. Men who had some natural gifts had not enjoyed the opportunity, or had refused the opportunity, of training themselves under a great master whose criticism and spiritual encouragement were necessary for the making of a great pupil. Surgery was not learned easily. It required devotion over a long period, and if a man was to be expert in his own day he must first watch the master work and learn from him. If, therefore, the orator was loud in his admiration of the expert surgeon he wanted also to be loud in his denunciation of some bad work practised in the name of surgery to-day. Every surgeon who had had much to do with the work of the last few years would bear out his criticism in that respect.

Earlier Access to Patients.

If the growth of surgery had advanced as far, or almost as far, as it was possible for it to go, as he thought it had, how could the science of surgery be improved? He believed that an enormous improvement was still possible if the surgeon had earlier access to patients, if he laboured to improve the condition of the patient before operation, and if he took pains to follow up the patient more carefully than was now the custom after the operation was concluded. Surgery was originally rescue work, and surgeons now were constantly doing rescue work, for instance, in connexion with gastric and duodenal ulcer. Was it really right, if they all knew their work and applied themselves properly to it, that there should be so many cases of perforation of gastric and duodenal ulcer in the hospitals to-day? When a series of these cases were examined, as they had been, by Mr. Sherren, or Mr. Walton, or himself, they found that the great majority of the patients who suffered perforation had been treated medically over and over again. There had been neglect somewhere, in the majority of cases, when the perforation of an ulcer occurred, and surgeons had the right—a right conferred upon them by successes extending now back for a great many years—for patients to be delivered to them for surgical treatment at a much earlier stage than was now the case.

The great plea one would make for earlier access would be in cases of cancer. Recently he had inaugurated a Yorkshire cancer campaign because he was rendered so miserable by the series of hopeless cases of cancer of the breast or cancer of the stomach which came along. In connexion with that campaign certain figures were got out under the auspices of the Ministry of Health relating to cases of cancer of the breast at Leeds General Infirmary examined over a long period of years, beginning about 1911. The cases were set out in three groups. The first group consisted of cases in which the breast alone was involved; in the second, the breast and the axillary glands were involved, and in the third the skin was deeply undermined or little satellite nodules were scattered over the surface of the breast. Of those in the first of these groups, 88.2 per cent. were alive and well, and without recurrence three years after operation, and 77.7 per cent. ten years after operation. In the second group 39.5 per cent. were alive and well and without recurrence three years after operation, and 15.8 per cent. ten years after. In the third group, 25.9 per cent. were alive and well three years after, 3.45 per cent. five years after, and ten years after all were dead. He did not think it was possible to put into figures anything more conclusive as to the need for earlier access.

Preparation for Operation.

The next method by which the results of surgery could be improved was by getting control of the patient some time before operation and doing all that was humanly possible to improve his condition. Before a patient was operated upon certain questions must be answered: first, that the operation was really necessary; secondly, that the patient was in the best possible condition to have the operation performed; thirdly, that the operation thus performed was relevant to the condition for which the operation was called. Observing a smile on the faces of his audience, the orator said that there was a certain humour about it, but there was no humour from the patient's point of view when gastro-enterostomy was done for carcinoma of the colon or tabes dorsalis, or a number of other things, instances of every one of which he had himself witnessed.

Somehow it was always the risks of surgery that were spoken of, never the risks of medicine. In a paper giving the results of ten years' work on gastric and duodenal ulcer he had stated that in the hospital there had been 129 deaths from haemorrhage or perforation with duodenal ulcer, almost every one of which had been treated medically not once or twice, but over and over again, whereas in the same period he had operated on 531 duodenal ulcers without a death. Which was the safer? Yet when the patient or his medical adviser was asked to consider medical or surgical treatment the view was taken that to enter upon operation was to enter upon a new risk. The fact was that it was much safer for the patient with any of these diseases to be on the operation table than to be on the hospital bed. In medicine lay the great danger—a danger so great in his judgement that much stronger arguments must be brought forward in favour of medical treatment before he at least considered it justifiable after the first attack.

Blood Transfusion.

In preparing the patient for surgery advantage was taken of a variety of different methods. There was no hurry unless malignant disease was present. The safety of surgery was really proportionate to the care with which the patient was prepared for operation, provided the hands were expert. If one was hurried and had to operate on the morrow, before there was time to examine the patient or make all preparations, a risk was being faced which in the present state of surgery he did not think they were entitled to run. One of the first things he found of use was blood transfusion. He learned this from Crile, and from 1908 onwards he had used it over and over again. In cases of splenic anaemia he could hardly get on without blood transfusion before and after operation. In all cases of splenic anaemia where the blood count came down to 3,000,000 or 3,500,000 blood transfusion was used, not once or twice, but repeatedly, and both before and after operation. In doing a blood transfusion it appeared as if the cholesterol of the recipient were mobilized far beyond the proportion which could be explained by the admission of new cholesterol. Patients were also given glucose intravenously. If the blood cholesterol of the patient was low and the blood urea high then a long time was taken in preparation of the patients, and sometimes there was difficulty with them under these circumstances, though by degrees their confidence was gained. The preparation of the patient who had jaundice had to be undertaken with great care. Years ago they learned the extraordinary

A CASE OF MIKULICZ'S DISEASE.

I WAS greatly interested in the account of two cases of Mikulicz's disease in the BRITISH MEDICAL JOURNAL (October 2nd, p. 586), and wish to report an instance of what appears to be the same disease, which came under my notice during the past six months.

A married woman, aged 28, came for advice on account of "her face swelling up." This, she said, commenced about three months after her third confinement which was normal in every way. At this time she presented the appearance of chronic Bright's disease, and was treated for this; at no time had she any albumin or casts in the urine. About fourteen days later she began to complain of swelling in the parotid area on the left side of the face; the swelling was uniform, more flattened than prominent, firm and hard, and extended from the middle of the cheek to the external auditory meatus. The temperature and pulse were normal, and in other respects she felt perfectly well. In three days a similar swelling in the corresponding area of the opposite side occurred. She later developed iritis in both eyes, for which she was treated in York County Hospital. No definite cause for this could be found. There was no history of venereal infection; the Wassermann reaction was negative. A week later, when seen at home, she complained of a hard lump under the chin and excessive dryness of the mouth. The left submaxillary gland was found to be enlarged to about the size of a pigeon's egg, was of dense consistency, and slightly movable; a day or two later the corresponding gland on the right side also began to swell in a similar way. The lacrymal glands were not affected, though there was some definite swelling about the lower eyelids; no other glands could be felt. She also lost considerably in weight. Several drugs were tried without any effect; she has latterly been having iodine, both by the mouth and as an external application. The parotids are now nearly normal in size, and the submaxillaries, especially that on the left side, somewhat smaller than they were; salivation is also returning, though slowly.

I think that this case, in spite of the fact that there was no definite swelling of the lacrymal glands, is very similar to the original one reported by Mikulicz in 1892.

I wish to thank Dr. J. C. Lyth of York for permission to publish this case.

York. G. B. EGERTON, *M.C.*, M.B., B.S.

Reports of Societies.

"BEFORE AND AFTER OPERATION."

ANNUAL ORATION OF THE MEDICAL SOCIETY OF LONDON BY SIR BERKELEY MOYNIHAN.

THE annual oration of the Medical Society of London (postponed from May on account of the general strike) was delivered by Sir BERKELEY MOYNIHAN, P.R.C.S., on October 11th. Sir HUMPHRY ROLLESTON, who on the same occasion was inducted into the chair of the society, presided.

The title of the oration, "Before and after operation," indicates not at all the breadth and eloquence of a deliverance which should long be remembered in the history of medicine. Sir Berkeley Moynihan began by declaring that the distinguishing feature of the intellectual life of the last half-century had been the advance of science. The progress in this respect had been revolutionary. New ideas were expressed is so new a language, and new methods had demanded so new a vocabulary that to the scientist of fifty years ago much of the literature of to-day would be almost unintelligible. The advance had taken place in every department of scientific activity. In some directions it had been stupendous, almost passing belief. Nor was the wonder of it lessened when compared or contrasted with what had been accomplished in other spheres of intellectual work. In painting, sculpture, architecture, and literature, the immediate interests had perhaps been altered, and the methods changed, but when the men who were engaged in these pursuits compared their own ideas and achievements with those of days gone by they were left in a condition of profound and reverent humility. In craftsmanship alone nothing more exquisite had ever been fashioned by human hands than the works which had been concealed for three thousand years in a tomb of Tutankhamen.

The Pathology of the Living.

In applied science nothing greater had been done than the progress of surgery since the days of Lister. Lister had been the greatest material benefactor the human race had ever known. He had said it once in Lister's lifetime—and he was interested to learn from Sir Rickman Godlee that nothing gave Lister greater pleasure than to hear it—that Lister had saved more lives than all the wars of all the ages had thrown away. Among the great adventures and the new enterprises which resulted from Lister's work were two things which changed the face of surgery. In the first place there was the possibility of recognizing in an earlier stage than had ever before been accessible the phases of disease at their very beginning. No relevant inquiry into the earliest conditions of disease had ever been possible before Lister's day. In consequence of Lister's work it was possible to see, during the lifetime of the patient, the stages of his disease, and to correlate those stages with structural alterations in a way that could not have been done before; and when operations were, occasionally, fatal it was possible to compare the conditions found on the *post-mortem* table with those which had been discovered during the conduct of the operation. This subjected the surgeon almost at once to a certain amount of derision because the conditions which he had described as being present during the lifetime of the individual did not seem to tally with the conditions found *post mortem*, and, as they all knew, it was only the *post-mortem* pathology which appeared then to have any validity. It was in consequence of a repetition of such criticisms from pathologists that he coined as a measure of self-protection the title "Pathology of the living," to show that there was a condition present during the lifetime of the patient with which the surgeon was acquainted, and which to him was a matter of supreme importance, different from the condition which existed after death. The lineaments of a man's face changed when he died, and the conditions inside him changed at least to an equal degree. He thought it was a pity that their transatlantic friends should have twisted the phrase into "living pathology," which was not the same thing.

This study of the pathology of the living led not only to a complete revision of old knowledge, it added new knowledge day by day to that which had been accumulated in the past. Let them take, for example, the subject of gastric ulcer and read what Mathew Baillie and others had written, and it would be found that while their writings were perfectly accurate in pathology they had no clinical relevance at all. When the surgeon came along and pointed out that gastric ulcer was a rare disease, not at all the disease which had been described for generations in the textbooks by physicians, it was regarded as almost too good to be true. The first of the conditions, therefore, which resulted from this study of the pathology of the living was a recognition of the much earlier phases of disease, and following upon this was the recognition of the interaction of diseases and of organs one upon another. It was learned that all ulcers in the stomach and duodenum were secondary; that there was an interrelation between the appendix, the gall bladder, and the pancreas, probably through the lymphatic system; much also was learned about the action of the spleen, and so forth.

Surgery the Instrument of Research.

Surgery was still, in the orator's judgement, the strongest weapon in the hands of the physician. It was the greatest instrument of research. But it was so little regarded as an instrument of research that even to-day less homage than was due to the surgeon was paid to him. Clinical research, which was the most arduous of all, demanded infinite patience, insight, intellectual integrity, and the power of generalization from a number of observed facts. When experiments were conducted upon animals in the laboratory, with far less anxiety, with no really arduous responsibility, with no clinical responsibility at all at stake, those experiments, brought to fruition, were rewarded with the highest honour which a scientific body in this country could bestow; but when man in all his

been carried out in the laboratory of the American Medical Association, and all were found to be equally pure. In this country the preparations of different firms had not been tested by any central laboratory.

Dr. Graham here related observations made upon one patient—the worst case of gout he had ever seen—from the point of view of uric acid output following the administration of atophan. It was found that the drug only caused a large excretion of uric acid for the first two or three days of its administration, and that the excretion then fell to normal. It was suggested that it was only necessary to give the drug for three-day periods, and then to allow a period with no drugs before starting another course. He adopted this principle, and had treated all his gout cases since on those lines. The patient in this instance had now had the cinchophen preparation for the last six and a half years in 20-gr. doses three times a day for three consecutive days in each week; the total cost to the hospital was about £50. During this period his health had steadily improved. He had had only one attack of gout, on which occasion a mass of sodium biurate weighing about 35 grams was removed by the man himself from a sinus over his knee. He had never had any massage or radiant heat, as his hands were too badly damaged to recover, and the speaker had not thought about the other joints until, after some months, the man came back and said that his knees and ankles were recovering and he could walk much better. Unfortunately no plaster casts had been made of the hands, but the speaker felt sure that the swellings over the knuckles were very much smaller than formerly. Many other patients had been treated on these lines, and the great majority had no acute attacks of gout during the period of treatment and the local condition had improved immensely.

Cinchophen had other purposes in medicine. It was of use in the treatment of acute rheumatism, and relieved the pain just as effectively as sodium salicylate. It had a considerable effect on the liver, and had been used for the treatment of catarrhal jaundice. A certain number of unpleasant after-effects had been noted. Most of these were not serious; they included malaise, headache, intestinal discomfort, and urticaria. In July of this year Dr. Langdon Brown had reported that two patients, one of whom was taking cinchophen and the other the allyl ester of cinchophen, had developed jaundice and died. Other cases of jaundice were reported, and one case was shortly to be published by Dr. Clement Wells in which death occurred four days after the onset of the jaundice. After examining the notes of certain of these cases, Dr. Graham considered that the following facts had been made clear: that it was not the same proprietary preparation in every case which caused the symptoms (in each of the three fatal cases a different preparation was used); the symptoms followed very different doses; the drug in the fatal cases he had examined was given every day of the week without intermission, and in some of the cases there had been definite signs of disturbance caused by the drug, but no attention was paid to them.

Dr. Graham added that he had himself investigated three patients who had been taking cinchophen for long periods, but except in one case—and there the result of the test was doubtful—there were no signs of liver damage. He would suggest by way of precaution that cinchophen should be confined mainly to gout cases; that it should never be given for more than three or four days without an intermission of at least four days; that the blood uric acid should be estimated at intervals of, say, three to six months, and if the blood uric acid was normal the dose should be reduced to two days or only one day in the week. Finally, it was possible that testing the time which was taken for the drug to be excreted might furnish a guide as to whether there was any delay in excreting the drug.

Dr. Geoffrey Evans said that idiosyncrasy to cinchophen did occasionally occur, and he read a letter from the laboratories of one of the proprietary preparations in which this fact was acknowledged. The speaker then went on to give some good results of the treatment. One patient of his took colchicum for a considerable time; then a fresh doctor put him on sodium salicylate, and he was seriously ill. After this he was put on one of the cinchophen preparations (atophan), forty tablets a week. This he took regularly, and gradually himself reduced the dose. He found he kept going best if he took ten tablets a week, and he took them scattered over the week rather than—as the speaker about a year ago suggested—taking them for two or three days in succession with four days clear. The speaker thought that sometimes a better result was obtained by giving atophan, when well tolerated, distributed through the week than by giving it for one-half of the week only.

Dr. W. Langdon Brown said that Dr. Graham had been very cautious in the expression of any view about the pathology of the condition. Would he consider that in addition to some definite error of metabolism an attack might be precipitated by some mild infection? An attack might be due, possibly, to some focal sepsis acting on a person who had this peculiar characteristic of his metabolism. If that was the case it would explain why there was so much confusion between gout and rheumatoid arthritis. He remembered how, in the earliest days when cinchophen was used, he employed it in the case of a man who was subject to what he (the patient) called chronic gout. The drug appeared to effect an improvement, and the man himself said that it had done him more good than anything else. Yet on calling for an *x*-ray examination to clinch the diagnosis the report showed that there were present the typical changes of rheumatoid arthritis. No doubt in that case it was the analgesic properties which enabled him to appreciate it so much. The toxic cases had, of course, produced a serious difficulty. Speaking generally, he had followed the plan of giving the drug for two or three days in the week, followed by a period of rest. The first fatal case he saw had had the drug continuously outside before coming into hospital. In another case the drug was stopped in the course of the illness, and the patient asked that it should be resumed because she felt better during the time she was taking it. It was important to realize that these dangers were more likely to ensue in those cases where the drug was being used for its analgesic properties rather than for its direct effect on the uric acid of the blood; and he would make it a rule not to use the drug for any length of time without having an estimation of the uric acid of the blood carried out. The drug also should not be continued where there was any disturbance, such as urticaria or gastro-intestinal upset.

Dr. E. P. Poulton said that in this condition it was important that all possible sources of sepsis, such as the teeth and tonsils, should be seen to. He thought it was brought out in Dr. Glover's analysis of the chronic joint infections, published by the Ministry of Health, that if one wanted to find cases where the teeth were simply abominable one must go to cases of gout. With regard to diet, Dr. Graham had mentioned that carbohydrates or an excessive quantity of protein were not regarded favourably. In some work which he and Dr. Graham had done together they found that the uric acid in the urine was diminished when either protein or carbohydrate was excluded from the diet. It seemed to him reasonable that there should be some sort of interaction between these two in the formation of these purin bodies.

Dr. F. Parkes Weber said that he was under the impression that no other disease gave radiological signs really similar to gout, but it appeared from what Dr. Graham had shown that the changes in the bones in lupus perneo were identical with those which gout produced.

A Member of the Section mentioned that he had been a patient for phlebitis recently at a French spa, and there he was ordered a cinchophen preparation, 15 grains a day, a course lasting three days. He noticed, about ten days after starting, a good deal of tenderness over his liver, and accordingly he dropped the use of the drug. He had taken no alcohol, but large quantities of mineral water.

Dr. Graham, replying to Dr. Parkes Weber, said that many radiologists still needed to learn the *x*-ray appearances in gout. Another point of interest, suggested by Dr. Poulton's remarks, was that an attack of gout in a gouty subject often followed a trauma. In conclusion, he emphasized the importance of bearing in mind the possibility of any obscure joint lesion being due to gout, because this was one of the few types of chronic arthritis which could really be treated.

tendency of such patients to bleed after operation. There was a great deficiency in the calcium of the blood of the jaundiced patient. To give calcium orally, as Sir Almroth Wright had suggested, he found to be without value; it was now given intravenously and repeatedly. By the use of this and other methods, including the injection of alien serum, the jaundiced patient had been made much safer.

After operation blood transfusions were continued, as well as infusions of glucose. They might be confronted with acidosis, not uncommonly, or with alkalosis, more rarely. Patients with acidosis required glucose continuously, with or without bicarbonate of soda.

The Surgeon's Training.

The orator concluded with the remark that his thesis was one which, he was sure, would find general acceptance. It was, briefly, that surgery was no longer a question merely of operating. The work of the surgeon during the last generation or so had created new knowledge and had certainly revised old knowledge very considerably. During that time the surgeon had become a great craftsman, but something more than the finest craftsman was necessary, and he foresaw, in consequence of these changes that were occurring so insidiously in the work of the surgeon, a great change in the surgeon's training. In his own day he thought he had spent far too much time in the anatomy rooms, learning things which, having a rather tenacious memory, he had never been able successfully to forget. A man who was going to practise surgery must be a physiologist, a biochemist, and be steeped in the practice and religion of research. The surgeon could have any number of collaborators, but he himself must be chief. The patient's life was entrusted to him. There was no trust more sacred in the world than that which the patient placed in the surgeon. The operation table was really a high altar and the surgeon the priest. And the patient who had passed through the deep waters with the surgeon might have found them chill and bitter, but the thought of the surgeon's work with him, when the toilsome days were ended, would be like a glowing coal at his heart.

Mr. T. H. Openshaw proposed the vote of thanks, remarking that he had never heard more brilliant oratory in medicine. If there was one point in Sir Berkeley's discourse with which he was not in accord it was his reference to anatomy, which the speaker considered must be the absolute groundwork of the surgeon's knowledge, but he fully endorsed all that he had said about pathology and the need for close association between the biochemist and the surgeon.

Sir Archibald Garrod, in seconding, said that that was not the occasion on which the physician should try to get anything back, though various things might be said in defence of medicine. They had listened to a master of oratory on a subject on which equally he was a master.

Sir Berkeley Moynihan said that he really deserved some recompense, for—although none of his friends believed him—the most dreadful task in the world to him was to deliver a speech! His heart was with the physicians, and he himself was a physician doomed to the practice of surgery. In connexion with a very large share of his work inside the abdomen he owed to Sir Humphry Rolleston more than to any man living or dead. He had never been able to let go of his book. Not that it was everything he would desire from the surgical point of view, but, then, controversy was the delight of scholarship if care were taken that it did not become coarsening.

The Fothergillian Medal.

Before these proceedings took place Sir Humphry Rolleston presented the Fothergillian Medal of the society to Professor Sir F. Gowland Hopkins, F.R.S., who, he said, had combined the functions of a great researcher with those of a great instructor. Sir Gowland Hopkins, on receiving the medal, said that he had spent the greater part of his active life in regions quite remote from those in which alone the value of true scientific work could be appraised—that is, the domain of clinical medicine—and it was very encouraging to an experimentalist to have his work recognized in this particular connexion by a society so well able to decide whether it had been of value or not.

THE TREATMENT OF GOUT.

At the meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine on October 12th Dr. George Graham, the President, delivered his annual address from the chair. He took for his subject "The treatment of gout," but made some preliminary remarks on diagnosis.

Dr. Graham began by remarking that there was an impression abroad that gout had become a rare disease, whereas he believed that it still occurred very frequently. During the last two years, in the out-patients' department at St. Bartholomew's he had seen ten cases—four acute and six chronic. In obscure cases the family history was of great value in diagnosis. The actual history of the first joint symptoms when the condition was chronic was also useful. The first attack might be typical in the big toe-joint, though subsequent ones might affect hands or knees. The diagnosis of gout was easily made clinically when the big toe was affected, and also when the carpo-metacarpal joints of the index or ring finger were involved, but it was much more difficult when the affection was of the ankles, knees, wrists, or shoulders. The shape of the joints was nearly always asymmetrical, and this point was of use in making the diagnosis from subacute infective arthritis, where the joints were usually uniformly swollen. The presence of tophi in the ears or swellings of the bursae was significant, but often these did not occur. The changes which took place in the bones due to the deposit of sodium biurate made the skiagram of great value in diagnosis. Sodium biurate, unlike calcium salt, was not opaque to *x* rays, and when sufficient calcium had been displaced by sodium biurate a clear area would be seen. The changes were best seen in the small bones of the hands or feet, whereas it was rare to detect the changes in a knee-joint because of the thickness of the bone. The changes in the bones must be distinguished from those occurring in lupus perneo and in the arthritis which occurred in association with psoriasis, also from those due to long-standing subacute infective arthritis. The estimation of the uric acid in the blood was sometimes of great assistance in a doubtful case. A high figure for the blood uric acid—above 3 mg. per 100 c.cm.—was strongly in favour of gout, while a low one did not negative the diagnosis.

The first essential in the treatment of an acute attack was that the patient should rest the limb. If the lower limb was affected, bed was indicated; if the upper limb, a sling. In bed the patient should have a cradle to keep off the weight of the clothes. The drug which worked best was colchicum. Its mode of action was in no way understood. It had no effect at all on the excretion of uric acid, but it certainly relieved the pain and cut short the attack. It was of no value in prevention, and it had the disadvantage of sometimes causing unpleasant symptoms, such as dyspepsia, and occasionally severe diarrhoea.

In the prevention of an attack diet played a great part. Dietetic restrictions now, however, were less severe than formerly. The most important was abstinence from all foods containing large amounts of nucleoproteins, such as gland organs like sweetbreads, kidneys, and liver. Meat and fish contained purins, but in less quantity. If it was desired to make the diet very strict, beef might be avoided. The total protein should not exceed from 60 to 80 grams a day. Alcohol in certain forms was undeniably a contributory cause of gout, though its mode of action was unknown. Widal and his co-workers found that patients with gout would often give skin reactions when tested with different wines. Of nineteen cases, three gave very intense reactions, thirteen gave feeble reactions, and three no reactions at all. One lady who gave an intense skin reaction with burgundy always had an attack of gout after drinking any of it. Curiously enough, the wine which had the worst reputation in England—namely, port—did not give skin reactions in Widal's cases. Beer and champagne were considered to be very potent in this country; spirits did not affect patients.

The drug which was of most value was cinchophen, sold in this country under various proprietary names—atophan, agotan, phenoquin, quinophan. In the United States an analysis of the different preparations made by six firms had

name will always be associated was among the first to realize. Dr. Rona deals first with the general methods in use for making, characterizing, and examining active enzyme preparations. The main portion of the book is then devoted to the special methods which have been developed to deal with the peculiarities of the main groups of enzymes and their action. The treatment is comprehensive yet critical, condensed but explicit, and is cemented with sufficient discussion to give coherence to the whole book, although there has been no attempt at integration in the wider sense. The book is designed for the laboratory, and there it is likely to be in frequent use, and should meet most demands made upon it. We know of no other which so satisfactorily covers this field.

The two further parts of the book which are promised will deal respectively with the body fluids and with metabolism. These will be awaited with interest, though it must be said that in these subjects we have already a number of excellent manuals whose authority will not be easily challenged.

Two years ago the fifth edition of Professor HÖBER's fundamental treatise on the physical chemistry of cells and tissues was commended in these columns. The sixth edition[4] is now in our hands, and comprises, as before, a first section dealing with the physical chemistry of homogeneous and heterogeneous systems, and a second wherein these principles are focused upon the phenomena observable in living cells. How deeply physical chemistry has penetrated physiological thought may be seen in the variety of subjects discussed in the second part. These include the osmotic, ionic, and colloidal characters of the body fluids, the osmotic behaviour of cells and the great question of permeability, the physiological and pharmacological action of electrolytes and non-electrolytes, the electrical properties of cells and tissues, secretion and absorption, and the physico-chemical principles of metabolism. No brief review can give the measure of this large volume. It shows that critical understanding which marks the author's own experimental work, and it remains the most comprehensive and authoritative treatise in what is a very perplexing and elusive field of physiological inquiry.

CLINICAL AND RADIOLOGICAL STUDIES OF DISEASES OF THE LUNGS.

IT is the privilege of great men to have their works collected and edited after their death. This is of double advantage to the reader, giving him an easy access to the original contributions of the author, and so enabling him to follow the gradual evolution of the mind and abilities of one of the world's acknowledged masters. Dr. EMILE SERGENT, wishing no doubt to facilitate the task of his students, and hoping perhaps to have a foretaste of the posthumous fame that has so frequently been denied to great men, has adopted the habit of collecting his papers for himself. The present volume,[5] which contains clinical and radiological studies of tuberculosis, forms the third of his series. While not disparaging for a moment the laudable intentions of the author, it is easy to take exception to their concrete expression. This has resulted in the accumulation of a number of papers read before societies or conferences, or prepared for different medical journals, which in form and substance are almost identical. It is not to the repetition of ideas that we object—for this is inevitable in the case of anyone who wishes to make a point—but to the actual verbal repetition for which there is no necessity whatever. Had the author taken the trouble to write a book afresh, he could have compressed the same material into about half its present compass.

The range of studies is so wide that it is impossible here to touch on more than a few of them. On the subject of pregnancy and tuberculosis the author suggests that the reason why the disease remains comparatively latent until term and flares up after parturition is the compression on the bases of the lungs exerted by the child *in utero*. During pregnancy the respiratory excursion is limited; as soon as the compression is relieved the lungs are free to expand fully again, and the lesion progresses. To prevent this he advises the induction of a partial simultaneous bilateral pneumothorax on the day of delivery or as soon after it as possible. Hitherto he has had the opportunity of trying it on only a few cases, and is therefore unable to express more than a tentative opinion. His results are, however, sufficiently encouraging to warrant a fair trial being given to the method.

The examination of the faeces for tubercle bacilli is regarded with increasing favour. When patients cough up their sputum there is, of course no advantage; but in the case of those who habitually swallow sputum, and especially in those very early stages where the diagnosis is doubtful, this method is of great value. In nineteen cases free from sputum the author has been able to prove the existence of pulmonary tuberculosis by the discovery of tubercle bacilli in the faeces. Incidentally he suggests that the bad prognosis of open pulmonary tuberculosis compared with that of the closed type results from a constant reinfection through the intestine by bacilli that have been inadvertently swallowed.

A considerable amount of space is devoted to the radiographical examination of the lungs after intratracheal injection of lipiodol. This compound, which is opaque to *x* rays, is introduced through the crico-thyroid membrane by means of a syringe, the patient being placed in such a position as will enable the solution to run by gravity into that part of the lung which it is desired to examine. Photographs are taken before and after the injection and carefully compared. The method is chiefly of value in showing up lesions of the bronchi and bronchioles. Such conditions as tracheal deviation, dilatation of the bronchi, bronchial cavitation, and bronchial and pleural fistulae can be diagnosed with a certainty unobtainable by other means. Needless to say, there are numerous errors of interpretation which have to be guarded against.

As to the host of other subjects, too numerous to mention, that are included in this volume, we can do no more than recommend the reader to judge for himself.

DIETETICS AND NUTRITION.

PROFESSOR MOURIQUAND'S book on dietetics and diseases of nutrition[6] is one of the latest additions to the Collection Testut which is being published by Gaston Doin of Paris. The author's aim is to correlate the study of diseases of nutrition with modern ideas of food values and the physiology of digestion.

There is probably no subject of which the newly qualified student is more ignorant than that of dietetics, and there is perhaps no subject upon which the foundations of a successful medical practice can be more securely based. This is especially true in diseases of infants. Professor Mouriquand devotes almost a quarter of his book to the dietetics of children in health and disease. He writes attractively and clearly, and deals with children at every age from birth to adolescence. His discussion of the development of the healthy child is admirable, the directions he gives for breast-feeding and artificial foods for infants are sound and practical. The explanations of various causes of failure in the feeding of infants are likely to prove most helpful to doctors, nurses, and mothers.

In dealing with adult dietetics he divides his subject into four main headings: (1) general principles which underlie scientific feeding; (2) hygienic rules which should govern the dietary of healthy adults; (3) special dietaries adapted for a variety of pathological conditions, and feeding by artificial means, such as oesophageal and nasal tubes, nutrient enemata, gastrostomy or jejunostomy, intravenous and subcutaneous injections; and (4) the general subject of dietetics in disease.

[4] *Physikalische Chemie der Zelle und der Gewebe.* Von Dr. med. Rudolf Höber. Sechste, neubearbeitete Auflage. Leipzig: W. Engelmann. 1926. (6½ × 9½, pp. xvi + 955; 125 figures. M.39; bound, M.42.)

[5] *Nouvelles Etudes Cliniques et Radiologiques sur la Tuberculose et les Maladies de l'Appareil Respiratoire.* Par Emile Sergent. Paris: A. Maloine. 1926. (6 × 8½, pp. 537; 69 figures on 31 plates. 65 fr.)

[6] *Précis de Diététique et des Maladies de la Nutrition chez l'enfant et chez l'adulte.* Par Georges Mouriquand. Collection Testut. Paris: G. Doin. 1926. (5½ × 8½, pp. ii + 817; 60 figures, 3 plates. 60 fr.)

Reviews.

COMPARATIVE HAEMIC PATHOLOGY.

DR. J. P. MCGOWAN, pathologist to the Rowett Research Institute, Aberdeen, who has done much work on the diseases of animals, has, in a monograph entitled *Pernicious Anaemia, Leucaemia, and Aplastic Anaemia: An Investigation from the Comparative Pathology and Embryological Point of View*,[1] recorded and summarized the results of a research which has been in progress for three years. Beginning with an investigation of Ellermann's leucosis of fowls and iron deficiency in pigs, it has broadened out very considerably so as to lead to a comparison with pernicious anaemia and leukaemia in man and to an inquiry into the embryology of blood formation. From examination of nearly seventy cases of fowl leucosis conclusions different from those of Ellermann emerge; the process is regarded as a pathological entity, an irritative condition of the bone marrow, which may be caused by various factors and not by a specific filterable virus. From careful analysis of the facts, he argues that the leucosis of fowls is comparable to what he terms the "pernicious anaemia-myelogenous leukaemic syndrome" in man, there being the same gradation of morbid processes extending from pernicious anaemia at one extreme through intermediate stages to myeloid leukaemia at the other; some of the intermediate cases were formerly called leukanaemia. In pernicious anaemia the primary change is in the bone marrow. This change may be the direct result of a toxin actually present at the onset of the symptoms, or it may be a delayed sequel of the damage caused by a past infection. The haemolysis, which is generally considered to be due to a toxin of intestinal origin and to be responsible for compensatory hyperplasia of the red marrow, is regarded as the result, not the cause, of the marrow change; for it is argued that the embryonic red cells thrown into the blood are not suited for the adult circulation and so are destroyed by the reticulo-endothelial system, with resulting haemosiderosis and, from the liberated lipoids, increased adiposity.

Aplastic anaemia is contrasted with the conditions due to irritation of the bone marrow, and in this connexion attention is drawn to iron deficiency in sucking-pigs, which is a common disease, and prone to be fatal unless ferric oxide is added to their food. In this condition the bone marrow is aplastic, and the liver at first shows fatty change and then blood cells are found in the central zone of the lobules. The deficiency of iron is thought to prevent the liver from assisting in the formation of red cells, and accordingly those that are produced are unsuitable, and are destroyed, but from the lack of iron no haemosiderosis follows. The aplastic anaemia of trinitrotoluene poisoning, in which necrotic changes are prone to occur in the liver, is brought forward as evidence of the importance of the liver in preparing the precursor of haemoglobin, but it is rightly pointed out that in addition the bone marrow is directly damaged by poisons, such as benzol, which lead to aplastic anaemia.

The author's observations on the origin of blood formation also deserve consideration. His conclusions and arguments throughout the book must arrest attention both from the able manner in which they are presented and because of their differences from current doctrines.

OBSTETRICS AND PUBLIC HEALTH.

Obstetrics,[2] by Dr. J. S. FAIRBAIRN, has recently been published as one of the Oxford Medical Handbook series. Those who already know the previous works of the author will be prepared for the manner in which this small volume has been written. It is, admittedly, a task beset with difficulties to compress into so small a book the fundamentals of a large subject—and to lay clearly before the reader the practical applications of the principles involved. We venture to suggest that no writer could have more successfully achieved his object.

Dr. Fairbairn has for a long time taught the necessity of viewing obstetrics as being of prime importance in the consideration of the public health, and in this book he deals fully with this aspect of the subject. The student is to regard a labour, not as an isolated, troublesome occurrence, but one which has both an immediate and a remote important bearing on the life of the woman herself, and on that of the general community.

The author develops the theorem put forward in his book on *Gynaecology and Obstetrics*, published about two years ago, which was that the most useful maternity service should consist of fully trained midwives, acting under the supervision of medical practitioners who would be called on to intervene personally only in times of difficulty. Such a scheme, he believes, would lead to better after-results in both mother and child, and after-results form the test of good obstetrics. This idea is, of course, not new, but an impetus will be given to the proposal by the publication of this book. "The practitioner is between the upper millstone of not neglecting his other patients, and the nether millstone of satisfying and relieving his maternity patients, and it is only the obstetric forceps that saves him from being squeezed between the two"—thus writes Dr. Fairbairn in the last chapter of the book: to ease the lot of the unfortunate practitioner the midwives' services should be more freely employed.

The book makes no attempt to compete with the ordinary textbook. It is written to enlarge the outlook of the student in regard to this specialty, and to guide him in endeavouring to "correct a perspective that is liable to distortion from too close attention to detail." There is much that the student may fail to appreciate fully; but there also is a great deal that will be read with profit by those who are themselves practising only in this special department of medicine. To all interested the volume can be heartily commended.

PHYSIOLOGICAL CHEMISTRY.

THE laboratory is becoming a little embarrassed with the number of textbooks of practical physiological chemistry offered to it in recent years. Few of these are justified either by their authority or their originality, for they do not stray far from the broad path of conventional teaching. From Dr. P. RONA, however, we have the promise of a manual[3] which, if Part I is representative of the whole, will be both comprehensive and novel. This first part is devoted exclusively to methods for the study of enzyme action. Much foolishness has been spoken and written in the name of "enzymes." The charge is often made that when physiology encounters a phenomenon which it cannot comprehend it invents an enzyme, and there is some justice in the thrust, although we may be tempted to retort that the word is but a label, and as such is as convenient—and therefore equally justified by faith—as are the shibboleths of the physical sciences. The fullness of the role of the enzymes in the processes whose integration is life we cannot yet measure. From chemistry we are learning that there are few reactions free from any catalytic influence under the simplest experimental conditions, and, after all, enzymes are but catalysts. The living organism is essentially an event in time, and it is certain that its life is governed by a subtle control of rates of reaction. To demonstrate an effect in terms of the units of time conventional to human experience would seem to be an achievement of more immediate significance to the study of vital activity than it may be to cosmic or molecular changes of which the dimensions in time we can scarcely comprehend.

The study of enzymes, then, is essentially a problem in physical chemistry, as the school with which the author's

[1] *Pernicious Anaemia, Leucaemia, and Aplastic Anaemia: An Investigation from the Comparative Pathology and Embryological Point of View.* By J. P. McGowan, M.A., M.D., B.Sc. London: H. K. Lewis and Co., Ltd. 1926. (Demy 8vo, pp. vii + 116; 12 figures, 5 plates. 7s. 6d. net.)

[2] *Obstetrics.* By John S. Fairbairn, M.A., B.M., B.Ch.Oxon., F.R.C.P. Lond., F.R.C.S.Eng. Oxford Medical Publications. Oxford Medical Handbooks. London: H. Milford, Oxford University Press. 1926. (Fcap. 8vo, pp. x + 221; 29 figures. 5s. net.)

[3] *Praktikum der Physiologischen Chemie.* Erster Teil: *Fermentmethoden.* Von Peter Rona. Berlin: J. Springer. 1926. (5½ × 8½, pp. xi + 331; 73 figures. R.M.15.)

demand different fare, and that food not consumed at one meal can be palatably dished up later. The compilation seems to have been carefully made, but we demur to the statement that one pint weighs one pound. We seem to recollect a jingle stating that "A pint of water weighs a pound and a quarter."

Mr. HORNIBROOK and his wife, better known as Miss ETTIE A. ROUT, seem to be of opinion that the source of all ill health is chronic constipation. In *Physical Fitness in Middle Life*[13] Mr. Hornibrook maintains that the modern cult of athletics is incomplete, and is not followed by self-discipline and suitable exercises in later life. Mrs. Hornibrook, in *Sex and Exercise*,[14] thinks that prolonged constipation is the cause of many female troubles, including frigidity in marriage. Both authors advocate a system of exercises based on native dances as the cure for constipation and its attendant evils. Mr. Hornibrook describes the overloaded colon as the white man's burden, because it ought to be emptied at least thrice a day. He thinks, also, that the inventor of the modern water-closet seat ought to have been slaughtered with his own contraption, since it leads to a wrong posture in defaecation. Mrs. Hornibrook advocates continuous rotary motion, as in the *danse du ventre*, this being conducive to muscular development and organic health. The arguments in the book are supported by quotations from Dr. Leonard Williams, Sir William Arbuthnot Lane, and Dr. A. C. Jordan. To the ordinary person the insistence upon the defects of one portion of human anatomy may perhaps suggest some lack of perspective.

[13] *Physical Fitness in Middle Life*. By F. A. Hornibrook. With a Foreword by Leonard Williams, M.D. London and New York: Cassell and Co., Ltd. (Demy 8vo, pp. vi + 116; 4 plates. 6s. net.)
[14] *Sex and Exercise*. By Ettie A. Rout (Mrs. F. A. Hornibrook). Foreword by A. C. Haddon, M.A., Sc.D., F.R.S. London: W. Heinemann (Medical Books), Ltd. (Demy 8vo, pp. ix + 97; 15 figures. 6s. net.)

PREPARATIONS AND APPLIANCES.

Bone Skids.

MR. ROBERT OLLERENSHAW, M.D., F.R.C.S. (Manchester), sends us a note regarding a simple instrument which seems likely to prove of use to surgeons in dealing with fractures of the long bones, more particularly, as the accompanying illustrations

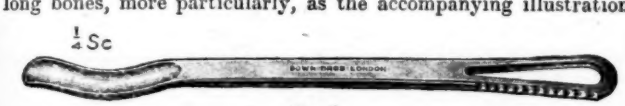


FIG. 1.

FIG. 2.

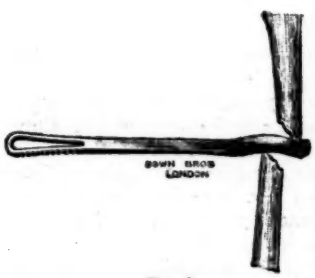


FIG. 3.

FIG. 4.

show, as an aid in restoring the alignment of the bones. "The drawings," Mr. Ollerenshaw writes, "illustrate an instrument made for me by Messrs. Down. I have found it to be very useful in cases of recent, or older, fractures where operation has been found necessary. Its design is based on the 'skid' used by Murphy, but it has (1) a more deeply grooved blade which gives a better lateral hold on the fragments; (2) a more extended beak, with well cut transverse grooves; and (3) a good handle. It is single-ended, and so does away with the serious objection to Murphy's and to all double-ended instruments. It is made in a set of three sizes, the largest being of suitable shape for an adult femur, the second for bones of normal tibia size, and the small one for the long bones of lesser calibre." Fig. 1 is a drawing of the instrument, while Figs. 2, 3, and 4 show the method of its use in skidding the fragments.

MEDICAL SICKNESS, ANNUITY, AND LIFE ASSURANCE SOCIETY.

THE annual general meeting of the Medical Sickness, Annuity, and Life Assurance Society, Limited, was held at the offices of the company, Lincoln House, 300, High Holborn, W.C.1, on October 11th, under the chairmanship of Dr. F. J. ALLAN.

Chairman's Address.

The CHAIRMAN, in his opening remarks, referred to the satisfactory progress of the society. He said that though the number of new policies had not been quite so many in the last year as compared with the previous year, it would be remembered that in the preceding year a certain amount of business came to the society through the failure of another company. Allowing for this, a comparison of the figures showed a steady increase year by year. The benefits accruing to members under the sickness and accident policies were the best obtainable, and the directors had decided to give even greater benefits, to apply to both existing and new policies. Among other things, members going on holiday in certain countries for a period not exceeding three months would remain covered without payment of any extra premium. An interesting fact was that though the premium income had almost doubled since the incorporation of the society as a limited company, the claims had only increased from £20,539 to £26,449. The directors always took a sympathetic view of cases in which, perhaps, the requirements under the rules had not been strictly complied with, as, for instance, in a case of serious accident or illness a member might not be able to give notice within the specified time or be in a condition to instruct others to act for him. The directors were, however, careful to get the fullest information in each case, and in difficult and prolonged cases they had even paid specialists to examine the patients. The explanation why the amount paid out had not increased in the same proportion as the increased membership was chiefly due to the careful medical examination of proposers. The society had the great advantage of having a board of directors composed of medical men who were able to bring their knowledge of the various sides of medicine to bear on the problems as well as their long experience in dealing with sickness assurances. He regretted to say that Dr. David Forsyth, who had acted as the trusted medical adviser of the society since 1920, had found it impossible to continue to act for the society; they had, however, been fortunate to secure the services of Dr. A. Hope Gosse, whose work in connexion with cardiology was well known. The life assurance branch continued to advance slowly but surely. The expense ratio had fallen from 7 per cent. to 6.3 per cent., which was less than half the expenditure of most companies. Although the new proposals accepted during the last year showed an increase on previous years, the sums insured for were for lower amounts; this was attributable to the effect of the general depression caused through the coal strike, and nearly all large insurance companies chronicled the same condition of affairs. The quinquennial valuation of the assets of the society would take place on June 30th, 1927. Private valuations held by their consulting actuary, Mr. Warner, indicated a most satisfactory result, provided more normal conditions prevailed during the coming year. The net rate of interest earned had increased from 4.1 per cent. to 4.42 per cent. Every care was taken to ensure that the investments were of the highest grade.

Election of Directors and Auditors.

The reception and adoption of the report, having been duly moved and seconded, was carried unanimously. Dr. J. Allan and Mr. W. H. Dolamore were re-elected directors, and Messrs. Harber, Sturges, and Fraser were reappointed auditors. A vote of thanks to the manager and the staff for their loyal co-operation in the work of the society was carried unanimously.

In reply to an inquiry from Dr. FAIRFIELD THOMAS, the CHAIRMAN stated that the sickness experienced during the past year had been rather higher than in the last few years; it was, however, still well within the expectation.

Extraordinary General Meeting.

The business of the ordinary general meeting having been concluded, an extraordinary general meeting followed for the purpose of approving alterations in the articles of association. After hearing from the chairman the reasons for the proposed changes, the meeting approved them. The CHAIRMAN said that the proposed changes would come up for confirmation at a further extraordinary general meeting to be held on November 1st.

A vote of thanks to the chairman, proposed by Sir WILLIAM WILLCOX and seconded by Dr. FAIRFIELD THOMAS, was carried unanimously.

Professor Mouriquand arranges his material well. When he discusses the diet appropriate to a certain disease he begins with a short but thorough consideration of the pathology of the disease and the manner in which normal nutrition is interfered with, and then he applies sound physiological principles to overcoming so far as is possible the defects of digestion and assimilation. He does not omit to mention also those drugs which may act as correctives and adjuvants to the dietaries recommended. The chapter on diabetes mellitus is not equal to the general standard of the book. Possibly this may be explained by the difficulties that have stood in the way of a general use of insulin in France. Still the author deserves high praise for the comparatively novel way he has approached a vast and complicated problem.

Dietetics are entering more and more into everyday practice. In many hospitals in America it is customary now to have an official, often a woman, who is responsible for interpreting the directions of the physician and supervising the preparation of the special diets ordered. This plan was adopted in the Edinburgh Royal Infirmary some years ago, when a "Sister Dietitian" was appointed. This is an excellent example to follow, for it conduces to economy in housekeeping, assists in the cure of disease, and adds much to the comfort and enjoyment of the patients.

IMHOTEP.

Dr. Jamieson B. Hurry, who is well known for his works on vicious circles in disease, and has also written the history of the Reading Pathological Society, has now struck out a new line in his readable and at the same time carefully documented account of *Imhotep, the Vizier and Physician of King Zoser, and afterwards the Egyptian God of Medicine*,[7] who, according to Sir William Osler, is "the first figure of a physician to stand out clearly from the mists of antiquity." Zoser was a Pharaoh of the third dynasty (circa 2980-2900 B.C.). He is commemorated in the step-pyramid of Sakkarah near Memphis, so familiar to visitors of the Nile, which was designed for his royal master by Imhotep, who was a notable architect, was chief lector priest or kheri-heb, was eminent as a writer and the "patron of scribes," as an astronomer, and had a high reputation as a magician and a physician. He has also been described as "the earliest philosopher and wise man known to the world's history." Magic and medicine, in the order of their seniority, were closely allied in early times, and although Imhotep was a famous magician it was his success as a healer of the sick that led eventually to his deification. This is the view generally accepted, but some doubt was cast upon it by Dr. Edith Guest in an article on ancient Egyptian physicians published in the Journal on April 17th, 1926 (p. 706). The dates of Imhotep's birth and death are unknown; his father, or at least the husband of his mother, was a famous court architect, but by a double affiliation he was regarded as the son of the god Ptah. About the details of his medical practice history appears to be silent, but he became a medical demigod before 1580 B.C., and his apotheosis as a full God of Medicine occurred about 525 B.C., when Egypt, then conquered by Cambyses, became a Persian province.

Dr. Hurry devotes a special chapter to ancient Egyptian medicine in order to show the extraordinary development of the healing art that had been reached in that country as compared with other parts of the world in the remote time of Imhotep. The practice of mummification and embalming rendered visceral anatomy familiar, and according to the Edward Smith papyrus early Egyptian medical men dissected the human body. The excessive specialism described by Herodotus, one practitioner one disease, appears from recently discovered medical papyri to be an incorrect picture of what actually existed.

Throughout this beautifully illustrated and printed volume there is evidence of the accomplished author's literary research and scholarly taste.

[7] *Imhotep, the Vizier and Physician of King Zoser, and afterwards the Egyptian God of Medicine.* By Jamieson B. Hurry, M.A., M.D. London: Humphrey Milford. Oxford University Press. 1926. (Demy 8vo, pp. xvi + 118; 17 plates. 7s. 6d. net.)

NOTES ON BOOKS.

Miss Margaret A. Shuttleworth has written an excellent little manual on general physiology and hygiene for the use of senior scholars and students in training colleges, under the title *The Wonders of the Human Body*.[8] The general build of the body, the bones of the skeleton, the structure of bones and variations due to dietetic disease, the effects of movement and exercise, the nature of the blood, the circulation, respiration, ventilation, food and digestion, drink, diet and age, excretion, clothing, cleanliness, the nerves and sense organs, and finally infection and the prevention of disease are dealt with. The book is well written, the statements true and, so far as they go, sufficient; the breast-feeding of the infant, prevention of infection by cleanliness and by such measures as vaccination, are well treated. There are no sins of commission, but there is a glaring sin of omission. The mysteries of trypsin, amylopsin, and lipase are dealt with, but there is never a word that would suggest that mortals have to come into the world somehow. There is a babe at the breast in Chapter XVII, but as to how it got there nothing is said. It surely should not pass the wit of the lady who has written this book to add a chapter describing the growth of a fertilized human egg, and showing that this process is the same for plant, animal, and the human animal. Nothing would curb prurient curiosity better than such a wide generalization.

The perusal of a book by Mr. H. E. Cox on *The Chemical Analysis of Foods*[9] reminds us that methods of analytical examination of these substances have been developed in diverse forms by different experimenters. The experience of everyone who has explored the possible variations of practice is accordingly an acceptable addition to the literature on the subject. But this book, useful as it is in that sense, shares in the defects of other treatises. For the information most to be desired is not merely directions for procedure, but enlightenment on the causes that disturb precision and the ways in which their effects may be avoided or controlled. The treatment accorded to the subject of jams, cordials, and fruit products is sufficiently extensive to merit mention. The concise arrangement of subject-matter is commendable, and the many references to original publications render the work a handy laboratory companion.

In *Goiter and Other Diseases of the Thyroid Gland*[10] Dr. A. S. Jackson gives a description of the anatomy of the thyroid gland, discusses the etiology and geographical distribution of goitre, and deals with the diagnosis, classification, and treatment of the condition. He recommends that iodine should be administered as a preventive to all persons between the ages of 8 and 20 who live in the large "goitre belt" of the United States, where the disease appears to be extending. He considers that both adenomatous and exophthalmic goitres should receive early surgical treatment. The book is copiously illustrated.

Dr. Reginald Cock does not believe in evolution, and explains his reasons in a small book, *Genesis v. Evolution*,[11] dedicated to the memory of William J. Bryan, the hero of the evolution trial at Dayton, Tennessee. He advances arguments to prove that man must be descended from a perfect human being, Adam; he seems to attach more importance to the analogy of a butterfly's wing to the wing of a bird than to the homology of the latter with the fore-limb of a squirrel; and he asks what right anyone has to assume a constant progress in the human race when the observation of thousands of years, within the historic period of mankind, furnishes no proof of advance. Progress by mankind, he says, is impossible except through recognition of the archetypal man. Dr. Cock explains where Cain got his wife, and how the whale was able to swallow Jonah. It appears also that Darwinism fosters war, and is the origin of socialism.

Mrs. Peacock has compiled a useful little book of recipes, to which is prefixed a table of breakfasts, dinners, and suppers for each day of every month in the year.[12] The object of *The Practical Daily Menu* is to help the housewife in answering the question "What shall we have for breakfast, dinner, and supper?" Emphasis is laid on the facts that different seasons

[8] *The Wonders of the Human Body: A Health Reader for Schools.* By Margaret A. Shuttleworth. London: University of London Press, Ltd. 1926. (Cr. 8vo, pp. xi + 195; 41 figures. 2s. 6d.)

[9] *The Chemical Analysis of Foods.* By Henry Edward Cox, M.Sc., Ph.D.Lond., F.I.C. London: J. and A. Churchill. 1926. (Demy 8vo, pp. vii + 323; 38 figures. 18s. net.)

[10] *Goiter and Other Diseases of the Thyroid Gland.* By Arnold S. Jackson, M.D. New York: P. B. Hoeber, Inc. 1925. (Sup. roy. 8vo, pp. xv + 401; 151 figures. 10 dollars.)

[11] *Genesis v. Evolution.* By Reginald Cock, M.R.C.S.Eng. London: Elliot Stock. 1926. (Cr. 8vo, pp 77. 2s. net.)

[12] *The Practical Daily Menu.* By Christina B. Peacock. London and Edinburgh: W. and R. Chambers, Ltd. 1926. (Cr. 8vo, pp. 172. 2s. 6d. net.)

to ordinary paint and varnish. With lacquer finishes it is not so, though it is advisable to have the car washed as soon as possible after it has become dirtied or wet; but it is not essential. Neglect of this sort by the month can be remedied by very thorough washing and subsequent treatment with one or other of the different special polishes that have been produced. One of the best I have come across has been evolved by a well known maker of boot polishes. Certainly, it takes out any marks of rain-spots and so forth.

The Coming of Lacquer Finishes.

The best of these gun-cotton finishes not only improves with use; it is, besides, impervious to the effects of sun, cold, damp, sleet, grit, snow, tar, oil, grease, the heat of the engine under the bonnet, chipping, fading, and so forth. I do not know any one finish used so far by the British industry which embodies all these virtues. Most of those employed embody quite sufficient merits, however, to render them valuable to the motorist, especially to him whose circumstances are those of an owner-driver more or less maintaining his vehicle. For instance, if a cellulose finish does get chipped, the manufacturers can generally fill it over until the lacquer appears as new, because most of these processes are applied by pistol spraying under air pressure. Therefore all that is necessary is to spray and spray until an amount equal to the material lost by the act of chipping has become superimposed on the damaged part.

Some of these lacquer colours, however, are not immune from fading; but even so they do not fade as badly as do some of the lighter tones in paint or varnish. Some manufacturers, too, find that one process of lacquer gives satisfactory results in a given series of colours but unsatisfactory results in other series of colours; therefore they employ different processes, according to the hue they need. This is not always practicable, however, because very elaborate plant has to be laid down to utilize some of the best of these lacquer treatments. By contrast, some varieties can be applied by brush, and will dry in half an hour. Suffice it, however, that the results produced are really worth while. In fact, just as to-day nobody thinks of a passenger car being properly equipped unless it has brakes to all four wheels—though readers of the Journal will remember that only two years ago the matter was still regarded with considerable doubt, not by the public in general merely, but also by the car builders—so in two or three years' time nobody will think of having a cheap car standardized for all-round service the body of which is finished in anything except some form of gun-cotton lacquering. Cellulose lacquers are generally solutions of nitro-cellulose in a mixture of various solvents, such as butyl and amyl acetates, with the addition of suitable gums to toughen the film and give adhesiveness, and also a modicum of plasticizer to make the whole easily workable.

Novelties of Note.

The coming of lacquer finishes is exercising another influence on the appearance of cars in general. It presents the opportunity for standardizing hues of a delicacy most pleasing to the eye, eminently suitable for appearance on the open road, but which were not practicable from the maintenance point of view where produced by ordinary coachwork and varnishing schemes. Thus we are on the verge of an era of motor cars of more pleasing and less clumsy appearance. This tendency has even been noted by those charged with designing bodies treated on the ordinary paint and varnish principle: consequently next week it will be evident that the main novelty in the outward appearance of cars finished in conventional fashion is the use of two hues of the main colour scheme, in addition to touches of black here and there on the roofing. This use of two colours in panel fashion represents a development of real note, in that the most expensive motor carriages can be finished more effectively this way than by a reversion to the old coachbuilder's system of fine lines. Of course, the tapestry, linen and silk body coverings that are a novelty at the present French show are a mere attempt to create a passing vogue, and are not to be considered seriously by motorists in general. A motor car travels so much faster than a horse-drawn vehicle that floral decorative themes, tartan and haggis designs, and small square lines, are not suitable, since the details, attractive or ugly, are alike visible only when the vehicle and the observer are both stationary.

By contrast, the same new British body-colouring scheme is rendered possible by raising radiators. This is a very general practice this year. Thus from the top of the radiator along the saddle of the bonnet to and including the waistline of the car—which is also raised without prejudice to the interior lighting, since the windows reach just as high towards the roof—it is possible to paint a perfectly plain panel of colour. For example, by painting the boot, the waistline, saddle of the bonnet, the wings and the wheels in a darker hue of, say, green than the side panels of the car and the sides of the bonnet, which are a lighter tint, an effect is obtained that can be seen to equal advantage when the vehicle is stationary or in motion. The principle also offers the opportunity to bluff some body lines, which are perforce bulky, or of an awkward angularity or curvature; this is done in some of the bodies on the largest chassis in the world, the new Daimler. Incidentally, an announcement which is timed to be made at the moment these notes appear is to the effect that the oldest firm established in the British industry is introducing a "double six" cylinder engined chassis of nominal 50, actual 150 h.p., the car developing its power in such flexible and smooth fashion that it can be driven at from 2 to 82 miles an hour on top gear, being, therefore, a machine on which one starts on the direct drive and generally completes even a long-distance cross-country journey without coming off it, to judge from various experiments I have had. Such vehicles can be of interest only to the motorist with a very large income. But the reason behind such development should be noted. From the strictly engineering point of view, the whole tendency is to limit the size of the individual cylinder, since, if some of our largest six-cylinder engines were to be made to produce the power they should do for their volume, their performance would become coarse.

The Battle of the Cylinders.

Whenever one speaks with motorists in terms of miles an hour of travel, those facilities should be translated only into increased possibilities of flexibility for hill-climbing, and so forth, since very few people want to travel at more than forty miles an hour in any circumstances. But they would like to be able to maintain such speeds up gradients, especially if that could be done without change of gear. Therefore, the idea is to obtain greater flexibility with refinement, which means greater efficiency with, nevertheless, enhanced as distinct from prejudiced refinement.

Hence we shall see not only the introduction of more eight-cylinder-in-line engine chassis, notably a 35-h.p. type by Sunbeam, and a new 2½-litre type by Beverley-Barnes, also the introduction from America of a Stutz "straight-eight," but also a hint that the middle-size four-cylinder car engine is about to pass away as a type. In general, it may be stated that the builders of middle-size four-cylinder engined chassis tend to provide six-cylinder units instead, especially for vehicles coming within the 12 to 16-h.p. rating. This is merely to give a smoother and more flexible performance.

I foretell that in two years' time a general survey of the industry will reveal to anyone wanting a car of an engine size between our present 12 and 20-h.p. rating that it will be offered him in the form of a six-cylinder unit. Next week I shall deal more particularly with those new six-cylinder cars which come within the purse range of the average medical man, in which connexion I may say that notable fresh contributions are being offered by Clement-Talbot, Wolseley, Lagonda, and Standard in the smaller categories, and by Austin, Humber, and Sunbeam on the larger scale. As to four-cylinder engine practice of the very cheap sort, perhaps the most notable price contribution of the miniature-engined car is the £148 10s. overhead camshaft operated, overhead valve, 850 c.cm. Singer with quarter-elliptic springs fore and aft and rear-wheel brakes only.

MOTOR CARS FOR MEDICAL MEN.

NEXT WEEK'S MOTOR SHOW.

By H. MASSAC BUIST.

The resumed series of motor car shows in the Grand Palais, Paris, closes to-morrow (Sunday) night, and the twentieth yearly International Passenger Car Show, organized by the Society of Motor Manufacturers and Traders, under the patronage of the King, will open at Olympia, Kensington, on Friday next, October 22nd. It will remain open daily, Sunday excluded, until 10 o'clock on Saturday night, October 30th, the prices for admission being 5s. each day, with the exception of the Fridays and Saturdays, when the charge will be reduced to 2s. 6d. The scale of accommodation afforded in the enlarged building may be judged from the fact that, set end-to-end, there will be nearly three and a half miles of exhibits, the cars ranging in cost from £100 to nearly £4,000 each.

Considerations of Cost.

From the point of view of the average medical man cost takes precedence of all other considerations in respect of his motoring commitments. By cost I mean expenditure not only upon the acquisition but upon the maintenance (that is, the wearing life) of a car, since this matter has to be considered as a whole if one is to aim at obtaining the best value for money. This consideration needs stressing, particularly on the occasion of the forthcoming exhibition, because probably many a young medical man, without capital, will be sorely tempted to consider £100 cars. Doubtless he will read in the general press that the £100 car has arrived at last. In point of fact, the £100 car was standardized and offered to the public by Rover more than twenty years ago; and some of those cars are running to-day. But I do not advise any medical man in general practice to buy any £100 car that will be offered to him at Olympia, notwithstanding the fact that the least of them will have two cylinders, against one in the car of twenty years ago. The prime reason is that reliability and wearing life are essential in a medical man's car. Moreover, even if he is without capital he is not in the awkward predicament in respect of car purchases that those in his case were before the war.

Financial Facilities.

To-day much over 50 per cent. of the business in selling new motor cars is financed on the principle of payment by instalments. Therefore the medical man can set out in quest of real as distinct from apparent motoring value for money. To that end he must buy a car that has long wearing life. It is not merely that that is the most economical way; incidentally, it is a way that assures him, to a greater degree than any other method of procedure, a machine which shall be reliable no matter what the country of its origin. A long-wearing car must be one every detail of which, including the electrical fitments and so forth, will endure; therefore there will be no rattling loose, perishing of insulations, giving trouble through short circuits, and so forth.

When it comes to a borrowing transaction, one need only pay over a longer period, or slightly more for the usual number of intervals. I notice that one firm in London transacting business in all classes of cars has instituted a new purchase system by payments extending over a period of three years instead of the usual year or eighteen months. I am informed that the management has found the scheme answer very well, alike from the point of view of their clients and from that of the financiers. Consequently the actual bill of the medical man for equipping himself with a car really suitable to such strenuous all-the-year-round day and night service as the general practitioner is dependent upon no longer renders it impracticable for those who for the time being are in straitened financial circumstances to buy really sound cars. Unsatisfactory cheap cars are unsound, each proving a very expensive car in the long run. Further, the lapse of another year still fails to reveal to my experience a single case of a young medical man setting up in practice who has not found that, by acquiring a thoroughly sound car, he has doubled his income the first year of its use.

Factors Favouring those of Moderate Income.

The medical man must look in other directions than the £100 car if he is in quest of economy in association with satisfactory service. Happily, circumstances favour him. In spite of the coal strike—the effects of which on the motor industry have been severe, leaving many firms with heavy stocks, and putting others in the predicament of a shortage of raw material with which to carry on the production of new car types—prices all round show no increase. In nearly every instance in which the price factor is stationary, nevertheless additional equipment, or something else in the shape of more value for the given sum, is offered. In a great number of cases, of course, prices are reduced notably. Some of these developments are merely occasioned by the necessity to liquidate stock, which would have been disposed of by July last, at the latest, had not a prolonged coal strike upset the car trade. But in many cases reduction of price has been accomplished in association with developing products for the new season, and presenting them more or less in an entirely new guise, because in these factories there has been no accumulation of cars to work off and the captains of the industry have the pluck to carry on. I may mention in passing that when the coal strike is settled it is expected by the British motor industry that it will be quite two months before the flow of raw materials from the steel and auxiliary industries will begin.

In all these circumstances it will be appreciated that the home industry, in particular, is highly to be praised for carrying on, and especially for introducing entirely new designs at prices which represent better value than has ever been offered in the history of the trade, since, obviously, when a firm offers an entirely new superior design the temptation must be great to ask for it as much as it will fetch instead of tempting the buyer by marketing it right away at the lowest price that can possibly be contrived. Another factor in favour of the buyer at this moment is that the tyre industry has just reduced its prices. In some cases these reductions represent the third cut below the maximum prices obtaining during the rubber boom.

Reducing the Depreciation Factor.

I have striven to show that one of the most important factors to be considered by the medical man in respect of his expenditure on motoring is the depreciation of the car. The 1926 London Motor Car Show will present him with many examples of vehicles of various powers, so produced as very largely to eliminate the problem of depreciation. This does not concern him only in respect of determining the moment at which he feels he must dispose of his car. On the contrary, it also concerns him by eliminating the frequent necessity for sending his car periodically to the coachmakers for revarnishing, if not actually repainting, often to his great inconvenience as well as no small cost. I refer to the introduction of gun-cotton, or cellulose, finishes for coachwork, a development pioneered by the explosive manufacturers in America. The great transatlantic car builders, who had acquired many of these businesses, found such plant suitable for producing new style finishes for motor cars in the form of lacquers.

The British industry has investigated these developments for a long time. But this is the first season in which there has been any general movement on the part of our manufacturers to standardize lacquer-finished cars which, in any case, are immune from the effects of ordinary scratching, and which, treated as ordinary paint and varnish coachwork is treated, actually improve with use, instead of deteriorating. Further, lacquer finish does what no paint and varnish scheme can do: the former meets the needs of the medical man of moderate means who is called out in the middle of the night to drive through rain and mud, and who, on getting back fatigued, puts his car into the garage—which is ruinous

British Medical Journal.

SATURDAY, OCTOBER 16TH, 1926.

RECENT WORK ON THE BILIARY SYSTEM.

THE discussions in the Section of Medicine at the Nottingham meeting of the British Medical Association were on broad lines, and wisely dealt with subjects on the borderland between medicine and surgery, such as diseases of the biliary tract, blood transfusion, and the nature and treatment of malignant neoplasms. The discussion on some recent developments of knowledge of the biliary tract (reported in full this week at page 671) was, indeed, opened by a distinguished surgeon, Professor Evarts A. Graham of Washington University, St. Louis, U.S.A., who has done pioneer work, not only in demonstrating the almost constant association of hepatitis with cholecystitis, but in originating cholecystography. A somewhat unusual but most welcome feature of a Medical Section of the Association was the presence of the President of the Royal College of Surgeons of England, Sir Berkeley Moynihan, who joined in the discussion of a subject which he has done so much to advance.

The summary of the functions of the gall bladder—namely, regulation of pressure in the biliary system, as shown by cholecystography, and concentration of the bile, as brought out by changes in the density of the shadow—was supplemented later by a discussion of the question whether or not the gall bladder has the power of muscular contraction. The opener's opinion, based on experimental work in his laboratory and on observations made during numerous laparotomies, is that the gall bladder has not any power of active muscular contraction, changes in its size being the result of a milking action induced by duodenal peristalsis. In this connexion reference may perhaps be made to Chiray and Pavel's[1] experiments on dogs, which show by tracings from the gall bladder that it undergoes two kinds of spontaneous contractions, which, however, are rarely manifest to the naked eye. The tracings of these apparent contractions can perhaps be explained in some other ways. It may be recalled that Bainbridge and Dale's periodic waves of contracture have since been regarded as resulting in fact from pressure of adjacent organs and respiratory movements, for Professor Graham's associates Copher and Kodama have obtained curves similar to those of Bainbridge and Dale when a rubber bag is substituted for the gall bladder, and experimental work from the opener's laboratory, just published,[2] indicates that the contents of the gall bladder are got rid of by a threefold mechanism—a gradual washing out by the ingress of fresh bile from the liver, the elastic recoil of the gall bladder, and variations of the intra-abdominal pressure. This experimental evidence is much against the late S. J. Meltzer's hypothesis of contrary innervation of the gall bladder and Oddi's sphincter, on which the technique of Lyon's method of diagnosis and treatment by biliary drainage is based. Oddi's sphincter at the lower end of the common bile duct is stated not to be constantly present, and Professor Evarts Graham considers that the outflow of bile into the bowel is controlled by the tonus and peristalsis of the duodenum. On the other hand, McMaster and Elman[3] of the Rockefeller Institute for Medical Research, in two papers published since the Nottingham meeting, bring forward strong evidence that the gall bladder of the healthy unanaesthetized dog contracts after a meal with sufficient force to expel part of its contents against a considerable resistance pressure, and that Meltzer's law of contrary innervation, which has been much disputed, holds good—namely, that the tonic contraction of Oddi's sphincter at the lower end of the common bile duct relaxes when the gall bladder contracts. In this research the objections raised against both the contracting power of the gall bladder and Meltzer's law are taken fully into account, and it is suggested that the effects of operations and anaesthesia may account for the negative evidence of gall-bladder contraction obtained by Professor Evarts Graham and others.

Inflammation of the gall bladder is regarded in America as the commonest cause of dyspepsia, and Dr. A. F. Hurst considers it the most frequent intra-abdominal lesion. Professor Graham showed that this might spread by the lymphatics both from and to the liver, and he admitted in addition the advent of infection by the blood stream, by the lymphatics from a duodenal ulcer without any hepatitis, and also direct infection of the mucosa from micro-organisms in the bile, this being about the order of their respective importance. Just as cholecystography throws light on the functional state of the gall bladder, so too it elucidates pathological changes by revealing failure of bile to enter the gall bladder, defects due to the presence of calculi, and irregularities of contour due to adhesions and diverticula; it shows also variations in the normal density of the shadow, though the bearings of these are still open to further interpretation.

The history of cholecystography, introduced so lately as 1923 by Professor Graham in conjunction with W. H. Cole, is most interesting. Of the forty-one substances tried, twelve were found to outline the gall bladder, but only three of these—tetrabromphenolphthalein, tetraiodophenolphthalein, and its isomeric phenoltetraiodophthalein—are suitable for clinical use, the other nine having markedly toxic effects. After due trials of the first two the tetraiodophenolphthalein was employed and given intravenously, as this method is more reliable than the oral administration, which Dr. Izod Bennett,[4] who raised the question of the drawbacks due to thrombophlebitis after intravenous injection, had found uniformly successful in his last fifty cases. In Professor Graham's more recent experience there were fewer reactions after the new isomeric compound, the sodium salt of phenoltetraiodophthalein, than after the tetraiodophenolphthalein salt, and, as there had not been any alarming symptoms after its use in the last 500 cases, he felt justified in concluding that this danger had been eliminated. Out of 1,144 patients examined cholecystographically with the tetraiodo salts, 128 were operated upon, and in 124, or 96.9 per cent., of these the diagnosis made by cholecystography was confirmed.

In the discussion Dr. A. F. Hurst insisted on the importance of early diagnosis and medical treatment, and advocated large doses, up to 100 grains three times a day, of hexamine, with sufficient sodium bicarbonate and potassium citrate to keep the urine alkaline, and so prevent irritation of the urinary

[1] Chiray, M., and Pavel, I.: *Amer. Journ. Med. Sci.*, Phila., 1926, clxxii, 11-21.

[2] Copher, G. H., Kodama, S., and Graham, E. A.: *Journ. Exper. Med.*, 1926, xliv, 65-72.

[3] McMaster, R. D., and Elman, R.: *Journ. Exper. Med.*, 1926, xliv, 151-171, 173-198.

[4] See also Bennett, I., Moncrieff, A., and Nicholas, F. G.: *Lancet*, 1926, ii, 19.

Nova et Vetera.

THE "NARRATIVE" OF SIR WILLIAM BEATTY, M.D., LORD NELSON'S SURGEON.

As October 21st is the anniversary of the battle of Trafalgar and of the death of Lord Nelson, many patriotic Englishmen may be interested to read, about this date, a note on the "Narrative" of Sir William Beatty, M.D., Lord Nelson's surgeon.

William Beatty was born in 1773. He was educated as a surgeon, and entered the navy at an early age as a naval medical officer. He was surgeon to the *Victory*, Nelson's ship, at the battle of Trafalgar. Beatty was the author of a famous little book entitled *Authentic Narrative of the Death of Lord Nelson*. It was published in London in 1807.*

In it Beatty describes the death of Nelson and the autopsy. He records Nelson's last words to himself and those around him. Beatty tells us that on the day of the battle of Trafalgar, October 21st, 1805, after viewing the fleet, Nelson retired to his cabin for a few minutes, and wrote a prayer and a codicil to his will. Beatty describes the meeting of the two hostile fleets and the hoisting of Nelson's famous signal, "*England expects every man will do his duty*," about half an hour before the enemy opened their fire; and he tells us it is impossible to describe "the lively emotions excited in the crew of the *Victory*." The battle commenced at 50 minutes past 11. Early in the engagement a shot passed between Lord Nelson and Captain Hardy, bruising the foot of the latter, and Nelson remarked, "This is too warm work, Hardy, to last long." In the heat of the battle, about 1.15, Lord Nelson "was walking the middle of the quarter-deck with Captain Hardy, and in the act of turning near the hatchway," when a bullet "from the enemy's mizzentop" struck the epaulette on his left shoulder and penetrated his chest, and he fell with his face on the deck. When Captain Hardy expressed a hope that he was not severely wounded, Nelson replied, "They have done for me at last, Hardy. . . . My backbone is shot through."

When carried below to the cockpit Beatty was called, and Nelson remarked: "Ah, Mr. Beatty! you can do nothing for me. I have but a short time to live; my back is shot through." When examined by his surgeon Nelson said he was confident his back was shot through; that he felt a gush of blood every minute within his breast; and that there was loss of feeling and motion in the lower part of his body. His breathing was difficult, and he complained of acute pain about the sixth or seventh dorsal vertebra. Nelson frequently asked for drink, and to be fanned with paper, using the words "Fan, fan!" and "Drink, drink!" These words he continued to repeat until the end.

To Captain Hardy many messages were sent requesting him to come to Nelson. When Captain Hardy came, Lord Nelson said, "Well, Hardy, how goes the battle? How goes the day with us? I hope none of *our* ships have struck, Hardy." "No, my Lord, there is no fear of that," replied Captain Hardy. Then Nelson said: "I am a dead man, Hardy; I am going fast; it will be all over with me soon. Come nearer to me." When Captain Hardy said that he hoped Mr. Beatty could yet hold out some prospect of life, his Lordship answered: "Oh! no, it is impossible. My back is shot through. Beatty will tell you so." His Lordship then sent his surgeon away to attend to the other wounded, saying, "You can do nothing for me." But shortly afterwards Lord Nelson recalled him, and said: "Ah, Mr. Beatty! I have sent for you to say, what I forgot to tell you before, that all power of motion and feeling below my breast are gone, and *you* very well *know* I can live but a short time."

The emphatic manner in which he pronounced these words left no doubt in Mr. Beatty's mind that Nelson was thinking of the case of a man who had, some months before, received a mortal injury of the spine on board the *Victory* and had suffered from similar loss of sensation and paralysis. The case had made a great impression on Lord Nelson, and the cause of the symptoms had been explained to him. Mr. Beatty replied, "My Lord, you told me so before," and when he examined the legs to ascertain the fact, Nelson remarked, "Ah, Beatty! I am too certain of it; Scott and Burke have tried it already. *You know* I am gone." Beatty replied, "My Lord, unhappily for our country, nothing can be done for you." Soon afterwards Nelson said, "I know it. I feel something rising in my breast, which tells me I am gone." He often exclaimed "God be praised, I have done my duty." When Mr. Beatty inquired if the pain was severe, Nelson replied it was so severe that he wished he was dead, and then he added, "Yet one would like to live a little longer, too." Hardy then came a second time, and congratulated Nelson on the brilliant victory, informing him that fourteen or fifteen of the enemy's ships had surrendered. Nelson answered, "That is well, but I bargained for twenty," and then he exclaimed "*Anchor*, Hardy, *anchor*!" Soon Nelson remarked that he felt in a few minutes he should be no more, and added in a low voice, "Don't throw me overboard, Hardy"; and then came his request, "Kiss me, Hardy." Captain Hardy now knelt down and kissed his cheek, when his Lordship said, "Now I am satisfied. Thank God, I have done my duty." In a few minutes Hardy again knelt down and kissed Nelson's forehead. "Who is that?" said Nelson. The Captain replied, "It is Hardy," to which Nelson replied, "God bless you, Hardy!" Hardy now returned to the quarter-deck, and Nelson said to his chaplain, Dr. Scott, "Doctor, I have *not* been a *great* sinner." As long as he was able to give utterance Nelson continued to repeat, "Thank God, I have done my duty." These were his last words. He then became speechless, and died at 4.30 p.m., about two hours and forty-five minutes after being wounded.

The day after the battle Nelson's remains were placed in "a cask called a leaguer," which was then filled with brandy. At Gibraltar spirit of wine was procured. The body was then conveyed to England. On arrival at Spithead a *post-mortem* examination was made, and Beatty gives a concise professional report. The bullet was discovered lodged in the muscles of the back, towards the right side, and a little below the shoulder-blade. It had passed through the spine. As regards the course of the ball, Beatty reports:

> "The ball struck the forepart of his Lordship's epaulette, and entered the left shoulder immediately before the processus acromion scapulae which it slightly fractured. It then descended obliquely into the thorax fracturing the 2nd and 3rd ribs; and after penetrating the left lobe of the lungs, and dividing in its passage a large branch of the pulmonary artery, it entered the left side of the spine between the 6th and 7th dorsal vertebrae, fractured the left transverse process of the 6th dorsal vertebra, wounded the medulla spinalis, and fracturing the right transverse process of the 7th vertebra, made its way from the right side of the spine, directing its course through the muscles of the back; and lodged therein, about 2 inches below the inferior angle of the right scapula."

The immediate cause of death was a wound of the left pulmonary artery and the resulting haemorrhage. The injury to the spine must of itself have proved fatal, in Beatty's opinion, in two or three days.

After the battle of Trafalgar, Beatty was appointed, in 1806, physician to the Greenwich Hospital. In 1817 he obtained the degree of M.D.St. Andrews and the diploma of L.R.C.P.Lond. In 1818 he was elected F.R.S., and was knighted in 1831. He died in London in 1842.

R. T. Williamson.

* In 1894 a neat edition of this book was published in Birmingham, under the title of *The Death of Lord Nelson*, by William Beatty, M.D., surgeon to H.M.S. *Victory*. The War Library Series, edited by Professor Ed. Arber.

experts and laymen to "vet" such articles before publication.

At the conclusion of the discussion which followed Sir Thomas Horder's paper the meeting, which was so large as nearly to fill the Great Hall in the Association's House, adopted without dissent the resolution moved by Sir Thomas Horder and set out in full at page 169 of the Supplement. The resolution affirmed that the dissemination of news on health topics should be encouraged; that the actual medical instruction published might well be controlled by a representative body; and that editors of newspapers should not ask men in private practice to write articles under their own name. The difficulty arises with regard to the second clause, and we shall be glad to learn the opinion of those who control our lay contemporaries on it. It shows, at any rate, as we have said, evidence of goodwill, and ought to still the foolish accusation that the medical profession does not desire the public to get its information from the most reliable sources.

THE PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

When the Royal College of Surgeons arose upon the ruins of the Company of Surgeons of London its outlook was not much widened by the enlargement of its range of action. For a long time it remained, in practice if not in name, only a London institution, but after the establishment of the Fellowship in 1843 a gradual change came about. For the last fifty years or so the Council of the College has been strengthened by the presence of provincial Fellows among its members, who have generally been distinguished and progressive surgeons. Circumstances have greatly changed in surgical consulting practice in the last half-century, and it would be well if a greater proportion of the seats on the Council of the College were occupied by provincial Fellows, with the consequence of the chair being more often filled by one of their number, for a healthy decentralization of the practice of operative surgery, as well as of medicine, has followed on the foundation of the provincial universities and medical schools, so that the well-to-do need no longer come from the country to London for the best advice and the best operative skill. Up to the present time, however, we believe that no provincial surgeon has held the office of President, but now Sir John Bland-Sutton has been succeeded by one who is mature in reputation and can be trusted to do equal honour to the College and to his own University of Leeds. Sir Berkeley Moynihan's brilliant achievements in surgery are so well known as to need no particularization. Countless sufferers from dangerous abdominal disease owe him debts too great for payment, while his reputation in general surgery is only dimmed by the brilliance of his work in the hepatic region. If any proof were needed that there are exceptions from the scriptural saying that a prophet is not without honour save in his own country, the proceedings at Leeds on October 6th would furnish a striking example. Indeed, we think that, in these days and in this country at any rate, local patriotism and rivalry sees to it that the generous appreciation of the citizens of our great industrial centres should not be hindered in any way. The Corporation of Leeds did honour to itself, the University, and the medical profession in the person of Sir Berkeley Moynihan by presenting him with the freedom of the city. The ceremony was conducted with all the state and formality which befits such an occasion. The presentation of the freedom of the city to Sir Berkeley and six other living Leeds worthies marks the celebration of the tercentenary of the incorporation of the city. The casket in which was enclosed the illuminated scroll recording the gift of the freedom to the distinguished surgeon appropriately bore a representation of a bust of that great Leeds surgeon, and father of the medical school, William Hey, whom Sir Arthur Keith, in his *Menders of the Maimed*, justly honours as the first to recognize the true nature of internal derangement of the knee-joint, and the first to treat it successfully by manipulation founded upon exact knowledge, in place of the haphazard methods of the bonesetters, to whose tender mercies the sufferers from this injury had heretofore been left. The new freeman of the city of Leeds is a worthy successor of Hey and of the other distinguished men who have adorned that Yorkshire medical school and infirmary. One of the other recipients of the same honour on the same day was Mr. Charles Lupton, who has been a member of the board of the Leeds General Infirmary throughout the whole of Sir Berkeley Moynihan's connexion with it, and was for over twenty years its chairman.

SERVICE MEDICAL OFFICERS IN PEACE TIME.

The presidential address to the War Section of the Royal Society of Medicine was delivered on October 11th by Group-Captain Henry Cooper, D.S.O., R.A.F., who discussed some of the wider aspects of service medical work. The chief task of members of the War Section, he said, was to thrash out during peace time all questions open to debate which could affect the conduct of their affairs in future war, but to that end they had a double line of interests to follow. The first and more obvious was the observation of the health of the three fighting services and the maintenance of the highest degree of physical and mental efficiency. The second was a consideration of the forces which would be placed under their charge in the event of war, for the personnel now serving was but the nucleus of the forces which would be called into being in a great emergency. The discussions in the Section should have relevance to these future potential forces as well as to the stock—that is, the existing services—upon which those forces would be grafted. The general responsibility for the maintenance of national fitness was vested in the Ministry of Health, and whilst it was not possible or desirable for officers of the services to trespass upon the Ministry's sphere of activity, their interests were very closely bound up with the general question of national fitness. The consummation which they desired was to have a nation in which the principles of hygiene were thoroughly understood and universally practised, so that when vast numbers of men were mobilized for national service the rejections on account of unfitness, the necessity for hygienic instruction, and the dangers of epidemic disease, would all be reduced to a minimum. He thought it would be useful for members of the War Section to participate in discussions with other sections, and he suggested a number of subjects, such as preventable deformities, the early effects of middle-ear disease, the preparation of drugs and dressings in forms suitable for emergency and field work, the preservation of efficiency in tropical climates, and the early diagnosis of active service neuroses as a check on their development, all of which had an interest for other sections as well. He had frequently heard officers complain that in service life there was a lack of professional work and a consequent tendency to become rusty. But the service medical officer who thought that his whole work began and ended with the letter of the law as laid down in the King's Regulations was bound to sink into a narrow groove and to become almost mechanical in the execution of his duties. "The groove and how to keep out of it" would be a good theme for an appendix to a medical officer's handbook. Officers could do much in that sphere where service work bordered on the work of the civil profession. A closer liaison should be cultivated between men in the service and the men in civil practice. It should be

bladder. The mechanism of the antiseptic action of hexamine in the bile was further discussed by Dr. F. A. Knott, who suggested as one factor lowering of the surface tension of the bile. The cholesterol content of the blood was referred to by several speakers. Dr. Izod Bennett mentioned that his colleague Professor E. C. Dodds, in a paper in the press, had reached the same conclusion as Dr. J. M. H. Campbell—namely, that the supposed hypercholesterolaemia of cholelithiasis was largely a myth, and that an excess of cholesterol in the blood was mainly due to chronic parenchymatous nephritis and obstructive jaundice. Dr. J. W. McNee's opinion that, although cholesterol is derived from the food, a cholesterol-free diet is not of any real value in the prevention of gall stones, is obviously of much therapeutic importance, especially as yolk of egg and fats, which are rich sources of cholesterol, have a powerful effect in evacuating the gall bladder. Sir Berkeley Moynihan, who had found that Professor Graham's cholecystography gave a correct diagnosis in 92 per cent. of the cases, pointed out that the cholesterol content of the blood might be different in the early and in the later stages of gall-stone disease; at Leeds analyses had shown a high tide of cholesterol in the early stages, which more often came under observation in private practice, and that in the later stages, so frequently seen in hospital patients, there was hypocholesterolaemia. It would therefore appear that there is room for further information as to the cholesterol content of the blood in patients with gall stones.

THE PROFESSION AND THE LAY PRESS.

For the last year or so the relations between the medical profession and its representative bodies on the one hand, and the newspaper press on the other, have been rather strained. There may have been faults on both sides. The newspapers want information and they want news. We do not recall the exact legal definition of "news" in relation to the Copyright Acts, but, at any rate in the view of the news editor, anything that did not happen yesterday is not news. That part of the matter we may leave aside. There remains the subject of information. We do not doubt that responsible members of the journalistic profession desire to obtain correct information about health, as about other matters. The medical profession has a great and, as we hold, well founded objection to anything that savours of self-advertisement; it therefore looks with a critical eye on signed articles on medical subjects in the newspapers. The journalists just now are making efforts to organize themselves as a profession, and are finding, like other professions, including the medical, that it has a tail. At present the tail has too much chance of wagging the dog. The medical profession, however, has got further in preventing its tail wagging the dog than have the journalists. None of us desire that the rift between the profession and the newspapers should continue, much less that it should widen. No doubt the competition among newspapers is very keen, but a good reputation can only be obtained by a journalist and by a newspaper if they contrive to present the public with trustworthy information. That, without question, is the object of all responsible journals and journalists. The differences with the medical profession have been caused by want of agreement as to how the information should be supplied. It cannot be by the method of a penny in the slot, and the greater part of what the medical profession has to say to the public can only be issued after the substance and form have been carefully considered. We do not want our tail to wag us, and as things are there is a risk of this happening.

The question then is, how is authentic medical information to be supplied to the newspapers? The answer is not easy. The *Times*, in an anticipatory leader on Monday, said that "The last thing which any responsible newspaper desires is to serve the interests of a charlatan or a professional man who has so far forgotten his honour as to seek mere self-advertisement." But it tells us that the medical profession must not shut its eyes to the needs of the world in which it lives. We altogether reject the suggestion that the medical profession does shut its eyes to the needs of the world in which it lives, or, rather, of which it forms a part. It is very anxious to meet these needs and reform defects. To take the British Medical Association alone, we may remember how from its earliest days it took up the reform of the Poor Law and achieved much; but such work is long, and there is only now a hope that Mr. Neville Chamberlain will put the coping-stone on the edifice the foundations of which were laid by members of the medical profession. So, again, with public health, the Association has consistently and for more than half a century advocated reforms, some of which have been carried out with two results at least—namely, that disease has been diminished, and the everyday health of the people vastly improved. Incidentally, it encouraged and helped Parliament to pass Medical Acts to enable the public to distinguish between the trained and the untrained practitioner of medicine, with very great benefit to the public. By its efforts mainly came about the system of supervising the health of school children, and of curing and checking remediable defects. To it also is due in large measure the whole system now enforced by Parliament for the control of tuberculosis, and quite recently it has been concerned with the organization and extension of voluntary hospitals. All this work—and we have chosen only a few examples—has been altruistic, and has been done because the members of the profession, individually and collectively, are good citizens. Still, eaten bread is soon forgotten, and the question to-day is how to satisfy the legitimate demands of the press for trustworthy information.

Sir Thomas Horder, in his address to the St. Pancras Division of the British Medical Association (published in full elsewhere in this issue), has gallantly stepped into the breach, and though his solution is not complete it is evidence of goodwill. He takes care to enumerate some of the principal agencies for the dissemination of information already in existence; he mentions the Ministry of Health and the valuable essays specially addressed by Sir George Newman to the public. He might have said that excellent work of the same kind is being done throughout the country by the public health service, whose members are not slack in giving the public information whenever occasion serves. He might have mentioned also the medical press and its diligence in supplying trustworthy information which, through the public health service and through the clinical practitioner, finds its way to communities and to individual members of the public. But he recognizes that the newspaper cannot be expected always to wait for these considered pronouncements, and he suggests that the interests of the public would best be served by all articles and paragraphs on health subjects being controlled by experts whenever they deal with actual diseases and their treatment. He would have a committee of

—an interesting settlement of the problem, "When is a 'new case' not a 'new case'?" After all these explanations it is not surprising to learn that the returns for 1925 show that in many areas the records of work done are altogether inadequate, while in others the methods of collating the information required for the returns is unnecessarily cumbrous. It is satisfactory, therefore, that the department has prepared a form of dispensary card register and a form of dispensary work sheet which, it is hoped, will provide all the information necessary for completing Tables I, II, III, and IV, and at the same time give other useful information to local authorities. A statement is issued to tuberculosis officers asking for samples, explaining the use of the card and work sheet; and with this at hand it is possible that tuberculosis officers will not require further memorandums explanatory of memorandums. There are several possible explanations of all this pother. Either the Ministry of Health has not clearly in its mind the objective at which it aims; or it is not clear about the methods it proposes for attaining that object; or the intellectual standard of the tuberculosis officer is not equal to the objective or the methods of the Ministry of Health. Although we shudder at the thought of inviting further memorandums, perhaps it might be well if the Ministry would from time to time state briefly what it hopes to achieve through this accumulation of data on tuberculosis. In the meantime we can, from experience, sympathize with the Ministry on the last paragraph of its Memorandum 121/T. "Many of the returns for 1925 show a failure to secure adequate checking of the figures and agreement of totals. In making statistical returns it is of course essential that proper attention should be given to these points." Tuberculosis officers are not the only persons who fail to give this attention.

EDUCATION IN ENTOMOLOGY.

AT the International Congress of Entomologists held at Zürich last year Dr. H. S. Fremlin, of the Ministry of Health, presented a short paper pleading for a more widespread knowledge of entomology.[1] He urged the inclusion of this subject as part of the regular school curriculum and as a separate subject for those who may offer themselves as candidates for degrees in science. The paper is interesting in bringing forward examples of the ravages which insect pests may effect in agriculture and other industries, and also as agents in the causation of disease. Among the examples he adduces of the former are the wholesale destruction of forests in Europe and America by the nun moth and the gypsy moth; the former is so numerous that, after being blown out to sea by a hurricane, "when washed up by the tide, their dead bodies formed a wall six and a half feet broad and six feet high which stretched for many miles along the shore." Again, the winter moth may destroy whole crops of fruit trees in one year and so enfeeble them that the succeeding year's crop is negligible; finally, as a sea pest is mentioned the larva of *Callidium*, which is so voracious that it may seriously damage underground cables covered with creosoted cedar and lead plate. The author is not quite so happy in the examples he gives in the realm of medicine. Thus, he speaks of mosquitos as "carriers" of malaria and yellow fever, and the housefly as a "carrier" of typhoid fever. The latter is not a carrier in the accepted sense of the former, but a mere mechanical transmitter. Further, the man in the street reading this paper would be led to think that Sambon had solved once and for all the problem of the etiology of malignant tumours by incriminating the *Gongylonema*. It is essential that a paper written for such a definite purpose as this should be as free as possible from mistakes and should avoid hyperbole. To state that "nearly all tropical diseases are due to parasites," and that recurrent fever is due to fleas, are errors of fact. Speaking of education in entomology, the author mentions collections of insects by pupils of Bordeaux schools, and the international corporation in Holland for combating plant diseases and insect pests, but no mention is made of the Imperial College of Entomology and the Imperial College of Science, nor of the fact that all British practitioners intending to work in the tropics are advised to take the course and pass the examination for the Diploma in Tropical Medicine and Hygiene (candidates for Government medical appointments are compelled to take it), and that special courses in entomology, theoretical and practical, comprise an integral part of the curriculum. It is suggested that there should be established an entomological council, with an expert in each order of insects, to whom reference could be made for information and advice, and on the council there should be "a chemist, a botanist, a medical man, a veterinary surgeon, and a zoologist." Most people are aware now that the staff of the British Museum (Natural History) are always ready to do all in their power to identify specimens and to give advice to those who ask. The paper, however, will have done good service if it stimulates the laity to regard insects, not as mere nuisances, but as actual menaces to the health and prosperity of the people, dangers which can, in part at least, be averted by attention to measures of hygiene and cleanliness, assisted by knowledge of the life-history of these insect pests.

[1] *The Necessity for More General Education in Entomology.*

WITCHCRAFT.

IN a leading article (August 14th, p. 311) on the celebration in 1928 at the Royal College of Physicians of the three hundredth anniversary of the publication of William Harvey's great treatise *De Motu Cordis et Sanguinis*, we referred to the part which he took in securing the acquittal of the survivors of the Lancashire witches who were brought up to London for examination. From the evidence quoted by Dr. H. A. Clowes in an interesting letter which appeared in our columns on September 18th (p. 543), it seems that Harvey's part in the matter was probably only that of an *amicus curiae*, for he did not sign the report, and the actual physical examination was carried out by well known surgeons. But the note by Dr. Letitia Fairfield, which was quoted in our annotation "Autopsy of a 'familiar'" (October 2nd, p. 610), gives reason to suppose that he had previously shown excellent common sense in his dealings with another so-called witch. The subject of witchcraft has been dealt with in a popular manner in a book by Mr. J. W. Wickwar which appeared last year[1]; in it he has collected records of many epidemics of witch hunting and judicial murder in our own and other countries, including those in New England in the seventeenth century. The story is a terrible record of credulity and of the awful ferocity which may be bred by fear, especially when it is helped by fanaticism. In this country the last trial for witchcraft was held in 1720, and the Act of James I under which proceedings were taken was repealed in 1735; the last severe outbreak of wizard hunting had, however, ended in 1677, when Matthew Hopkins, the self-styled "Witchfinder General," was responsible for 260 indictments in the counties of Essex and Suffolk, the greater number of which, according to Mr. Wickwar, terminated in executions, including that of the vicar of Brandeston in Suffolk, a blameless old man. Hopkins at last was hoist with his own petard, and was himself hanged in 1647 as a wizard. *O si sic omnes!* but such poetical justice was by no means common. Cotton Mather, the Congregational minister of Boston, Massachusetts, died quietly in his bed, and probably

[1] *Witchcraft and the Black Art.* By J. W. Wickwar. London: Herbert Jenkins, Ltd. (Cr. 8vo, pp. 320. 8s. 6d. net.)

the desire of every medical officer, wherever stationed, to get into touch with the local civil medical men, and to attend, if his service duties permitted, the meetings of the local Branches or Divisions of the British Medical Association. He thought (and we are sure he is right) that if the point were put to them such Branches and Divisions would be glad to have an occasional paper by an officer of the service, and in the discussions following other papers of primary interest to civil practitioners the service officer could often take a useful part. A large number of civil practitioners had seen service, and they with others qualified later would flock to the service again in any great emergency, so that it should not be very difficult to enlist and retain their sympathy. They were all working for the same end—namely, an A1 population. Group-Captain Cooper went on to remark that the interests of the service officer followed the whole course of human life, from infancy up to military age. He, too, like his civil colleague, had an interest in the eradication of hereditary diseases and inherited susceptibilities; and one matter on which liaison with the civil medical authorities was very necessary was with regard to the reduction of the incidence of venereal and tuberculous diseases and the control of men suffering from these diseases when they passed out of the forces into civil life. The service officer was interested in questions of maternity and child welfare; it was well for him to follow also the measures adopted for the supervision of the health of school children and for ensuring the health of adults of service age. Movements for the provision of recreation grounds, for example, for the supply of good food, for better housing and sanitation, for the control of tuberculous disease in cattle, for the extermination of vermin, should all have his keen sympathy. The numbers of medical officers of the services were not very great, but the men were scattered all over the empire, and were moved frequently from one place to another. Wherever they went they should be eager to make and retain the friendship of the civil practitioners. For the education of the service officer himself frequent association with members of the civil profession would be of inestimable value, and he desired to impress on the young officer particularly the need for greeting his civil brethren with the hand of friendship, and so to soften the necessary formalities of service correspondence.

PILING OSSA ON PELION.

On September 26th, 1925 (p. 581), we published a note on Memorandum 37/T of the Ministry of Health, which set forth the duties of chief administrative tuberculosis officers of local authorities in filling up four tables prescribed in the memorandum. On December 18th Circular 640 invited local authorities to make returns on these tables for the year 1925; but the duty was not to be made obligatory until the end of the present year. A number of returns for 1925 have been received by the Ministry, and from these it has become clear that misunderstandings have arisen as to the kind of matter to be entered in the four tables. Consequently the Ministry of Health has issued to county councils, county borough councils, and tuberculosis joint committees (England) Circular 726 and Memorandum 121/T. The latter is a memorandum on the preparation of annual returns under Memorandum 37/T. It appears that some tuberculosis officers began by mistaking a date in Item 1, and then failed to appreciate that in Table I $D=1+(A+B+2)-(C+3+4)$. Further confusion arose between "new cases" and "contacts," which are intended to be mutually exclusive. Persons suspected to be suffering from tuberculosis, and attending the dispensary of their own accord or referred by a private medical practitioner, may give a history of previous contact with a known case of tuberculosis. They are not "contacts" for the purpose of Table I, but should be regarded as "new cases" and recorded under A. Difficulties arose about directions given in footnotes to Table I; so that "observation cases" which were diagnosed definitely later in the year got into the wrong category, and "lost sight of" cases seem to have become confused with "observation cases." Sometimes also patients who returned after being "lost sight of" got into the wrong category as "new cases." The term "lost sight of" seems to have caused a great deal of trouble, perhaps because the memorandum admits that it includes cases to which "the expression may not be strictly appropriate." Thus persons seen only once in consultation, or admitted to an institution otherwise than under the tuberculosis scheme, or ceasing to avail themselves of public medical treatment, are officially "lost sight of," however insistently they may otherwise obtrude themselves on the official eye. At this point the new memorandum introduces what we cannot but think to be a dangerous precedent. If the tuberculosis officer finds that these categories of persons amongst the "lost sight of" are in high proportion, there is no objection to his showing such cases in a footnote as "Not requiring or desiring public medical treatment." But they must be included in the total under Item 3. We fear that footnotes will give the really earnest tuberculosis officer a vast field for his energy. In paragraph 10 of the new memorandum the word "consultation" is defined. It is not necessary for the general practitioner referring the case to be present at the examination; it suffices for the tuberculosis officer to give the practitioner a report in writing. In Table II the expression "beds available" has sometimes been taken as meaning those available in the authority's own institutions; whereas an average of the beds taken as required in outside institutions, but not definitely retained, must be included. From this table also patients sent to the institutions by other local authorities must be excluded. In Table III a patient multiplies himself. If he has been discharged from institutions three times in one year he becomes three patients. But if he has only been admitted for a short period, say, twenty-four hours, for some special purpose, such as *x*-ray examination or pneumothorax refill, he ceases to exist officially, but is allowed the grace of appearing in a footnote. An "observation case" in an institution has the privilege of being two patients during one course of treatment, and appearing in Table II both as an "observation case" and as a "patient." In drawing up Table III the Ministry unfortunately forgot the possibility of an "observation case" dying in an institution; but at this stage in the memorandum it has been discovered that a footnote solves all difficulties. Conundrums such as whether a Class T.B. *minus* patient who becomes a Class T.B. *plus* patient in an institution can be transferred from one class to the other in Table III, which asks for classification on the condition on admission to the institution; and whether a person admitted to public treatment as a child, and continuing as a child for Table IV, should be counted as an adult in Table III if admitted to the institution after reaching the age of 15—to these riddles the Ministry answers Yes. It appears that in some areas doubtful cases are kept under observation for long periods. However useful this may be from a clinical point of view, officially it is disturbing. Consequently the rule should be to complete the initial examination within a month, to watch for evidence of the disease for another two months, and then to enter a provisional diagnosis of "not tuberculous," cross the case off the register, and include it in heading C (*b*) of Table I. The patient should be told to present himself for re-examination if any suspicious symptom arises; but if he reappears during the same year he need not be counted as a new case unless evidence of the disease is found. The following year, however, he becomes a new case even if free from the disease

cumbrous for use in practice. One is based on the power possessed by ultra-violet rays of killing infusoria which are exposed in a cell of standard thickness, and the dose is expressed as so many I.K. units. Another is based on the speed with which the rays decompose carbon tetrachloride with the liberation of free chlorine, but both these are unsuitable for medical men in practice. What is really needed is a pastille which will measure ultra-violet light by gradual change of tint in the same way that the well known Sabouraud pastille measures the dose of x rays. It is possible that this need has now been met by the Levy-West ultra-violet pastilles which have recently been introduced to the profession by Arnold and Sons. These are placed on the patient's skin, and gradually turn colour under the influence of ultra-violet light. They are said to be insensitive to visible radiation and to heat. A tint card is provided with them showing the tints indicating units of dosage from one to twelve units, and all that is necessary is to compare the tint of the exposed pastille with the standard tints on the card. One great advantage of using these pastilles is that accurate prescription is rendered easy. All that is necessary is to order so many units according to the Levy-West scale. These pastilles certainly deserve a trial.

LISTER CENTENARY CELEBRATION IN EDINBURGH.

A COMMITTEE has been formed in Edinburgh to celebrate the centenary of Lister's birth, and in view of the Annual Meeting of the British Medical Association in Edinburgh it has been decided to make the celebration coincide with it. Arrangements are being made to offer a prize of £25 and a gold medal for the best essay submitted on the subject, "The influence of Lister on the evolution of surgery." This prize will be open to medical students of any medical school in the British Empire and graduates of not more than one year's standing. A book dedicated to Lister's life and writings is being prepared, and will probably contain about two hundred pages of small quarto size. A public meeting will also be held, at which addresses will be given by Sir William Watson Cheyne, Professor Tuffier (Paris), Dr. Harvey Cushing (Boston, U.S.A.), Professor Caird (Edinburgh), and Mr. Hamilton Russell (Melbourne). A museum containing some of the more interesting relics of Lord Lister's life and work is being got together. This is as far as the plans have already gone. Further particulars will be published later.

ARSENIC IN MARINE CRUSTACEANS AND SHELL-FISH.

MR. A. CHASTON CHAPMAN, F.R.S., read a paper at the meeting of the Society of Public Analysts last week in which he produced evidence of the presence of compounds of arsenic in marine crustaceans and shell-fish. The amounts ranged from 10 to 174 parts of arsenic (as As_2O_3) per million of the wet edible portions. Native oysters contained from 5 to 10 parts, and Portuguese oysters from 33 to 70 parts per million. In fresh-water fish, shell-fish, and crustaceans the amounts of arsenic ranged from only about 0.4 to 1.5 parts per million. The arsenic in the marine animals must therefore, it was concluded, be derived from the sea water, and Mr. Chapman has ascertained the amounts of arsenic in sea water from various localities. Potted and canned crustacea and shell-fish contained from 0.5 to 85 parts of arsenic per million. The arsenic in the urine of two experimental subjects was, after a meal of lobster, raised from the normal figure of about 1/200 grain per gallon to 1/2 grain in one case and 1/3 grain in the other. Mr. Chapman, with the help of Mr. H. Linden, extended his researches to copper and lead. With regard to copper, the results expressed in parts per million of the dried edible portion were that lobster contained 167, crab 130, and whelks 115. The amounts of lead ranged from 5 (whelk) to 25.3 (lobster). Native oysters contained from 12 to 400 parts, and Portuguese oysters 10 to 307 parts of lead per million. Like the arsenic, these metallic impurities are probably derived from the sea water.

JOHNS HOPKINS SCHOOL OF HYGIENE.

THE new building of the School of Hygiene and Public Health of the Johns Hopkins University, which is to be formally opened next week, is an imposing fireproof structure occupying a dominant situation in North Wolfe Street, Baltimore, adjacent to the Johns Hopkins Hospital. It includes departments of bacteriology, immunology, chemical hygiene, medical zoology, physiological hygiene, vital statistics, epidemiology, and public health administration. The department of sanitary engineering is housed apart in the civil engineering laboratory of Johns Hopkins University in the Homewood quarter of the city. The new building has a basement and eight stories, one of which is mainly devoted to the administrative purposes of the school. The departments of epidemiology and public health administration are together on one floor. The remaining departments are self-contained, each on its own floor, with its own lecture rooms, laboratories, and animal house where appropriate. The laboratories, which are most completely equipped, offer special facilities for individual research. The animal houses, placed in a tier at the back of the main structure, are linked each to its own department by fireproof ventilated passages. Down to 1914 the teaching of public health in the United States was mainly carried on by the Massachusetts Institute of Technology and by various courses in medical schools. In that year a conference of leading authorities in public health was held to consider the question of the training of public health officials and other experts in sanitation. At the request of the conference Dr. W. H. Welch and Mr. Wickliffe Rose prepared a plan for an institute of public health, following on which the Rockefeller Foundation decided in favour of setting up such an institute at Johns Hopkins University. It was guided in this decision largely by reason of the facilities, organization, and ideals of the Johns Hopkins medical department. In June, 1916, the Foundation informed the university that it was prepared to co-operate in the establishment of a school of hygiene and public health "for the advancement of knowledge and the training of investigators, teachers, officials, and other workers in these fields." The university accepted the offer, and its board of trustees appointed Dr. W. H. Welch director. The school began its work in 1918. From 1918 to 1925 it occupied buildings on the site of the university, formerly used as physical and chemical laboratories. On the completion of the new building for the school in October, 1925, it came into occupation, but its ceremonial opening was postponed until now. The Johns Hopkins School of Hygiene draws its students from many lands, in both the new world and the old. The places of origin of those who were enrolled in its courses during the last completed academic year include England, Ireland, Ceylon, Brazil, Porto Rico, Panama, Siam, Germany, Italy, Holland, Hungary, Canada, Bulgaria, Jugo-Slavia, Spain, Japan, and China, as well as, of course, States of the Union.

THE Bradshaw Lecture will be delivered before the Royal College of Physicians of London on Thursday, November 4th, by Dr. F. G. Crookshank, his subject being "The theory of diagnosis." The FitzPatrick Lectures, on "Medicine in ancient Assyria," will be given by Dr. Arthur Shadwell on Tuesday, November 9th, and Thursday, November 11th. The subject of Dean Inge's David Lloyd Roberts Lecture, to be given on Friday, November 19th, is "Racial Degeneration."

never had a qualm of conscience on account of the many innocent people he had hounded to a painful death. Terrible as the British and New England record is, it is nothing to the holocaust of victims on the continent of Europe. Mr. Wickwar tells us that in Lorraine alone in the sixteenth century there were nine hundred convictions and executions for sorcery in fifteen years, and that in Germany between 1610 and 1660 there were over 100,000 convictions. The late French Academician Maurice Barrés stated that at one time certain villages of the Eifel district of the Rhine valley were depopulated by executions, so that not more than two living persons were left in each.[1] One remarkable fact which appears in all these persecutions is the tendency among certain accused to plead guilty, and to be proud of their supposed evil-doing. We could wish that Mr. Wickwar had given some of the authorities for his statements, for it is difficult to accept one or two of them.

EQUINE EPIZOÖTIC LYMPHANGITIS AND HUMAN HISTOPLASMOSIS.

Epizoötic lymphangitis is a highly contagious disease of horses which runs a chronic course, attacking principally the superficial lymph vessels and the mucous membranes, where it causes purulent inflammation. It spreads to the associated lymph glands and produces a characteristic bead-like thickening of the lymph cords. As a rule the internal organs are not affected, although occasionally lesions are found in the lungs and intestines. The cause of the disease is the *Cryptococcus farciminosus*, which seems to gain entry through open wounds and abrasions. The disease is usually confined to the horse and his relations, but at least three cases have been reported in man, one of the victims being a French veterinary surgeon and another a farmer, both of whom had received the infection from affected horses by inoculation. The disease in man is not very serious, though the abscesses which form heal with difficulty and recurrences are common and may be accompanied by fever and general weakness. The cryptococci, which are found in the pus, are round or oval bodies with a double contoured membrane. They reproduce by budding, and are generally classified with the yeasts. They superficially resemble Leishman-Donovan bodies, which, it is interesting to note, were recorded for the first time from the horse by Richardson only last year.[2] It has recently been pointed out by Ota[3] that the organism is not a true yeast, but one of the fungi imperfecti, and should be transferred to the genus Grubyella among the Hypomycetes. Its main interest to medical men, however, does not lie in the possibility of its transference to man—although it is probably more frequently transferred than the published records indicate—but rather in its close relationship to the *Histoplasma capsulatum* of Darling, who, in 1906, found in three human cases in Central America a new parasite which he described under this name; a fourth case has recently been reported by Riley and Watson.[4] The organism was at first regarded as a protozoon somewhat resembling leishmania, but differing sufficiently to merit being placed in a new genus, and the disease was termed "histoplasmosis." It has recently been shown that the organism is really a cryptococcus, but it has not yet been conclusively proved that it is the same species as causes epizoötic lymphangitis. In none of the four cases previously recorded was there any history of contact with affected animals, and, indeed, there are no authentic cases of the disease occurring in horses in Central or North America; what was considered in the past to be epizoötic lymphangitis in America has been shown to be really sporotrichosis, another equine disease which is occasionally transmitted to human beings. Moreover, in histoplasmosis there are well defined internal lesions which are never found in the equine disease. On the other hand, the disease in man is so uncommon that there can be no doubt that some animal reservoir must exist. What this animal is is a problem which still awaits solution, and with it will be solved the mode of infection of human beings with an uncommon but serious disease.

[1] Le Genie du Rhin, *Revue des deux Mondes*, 1921, vol. 61, p. 20.
[2] *Trans. Soc. Trop. Med and Hyg.*, xix, p. 411.
[3] *Ann. de Parasit.*, 1925, ii., p. 71.
[4] *Amer. Journ. Trop. Med.*, 1926, p. 271.

ALCOHOLISM IN CLASSICAL ANTIQUITY.

At the first meeting of the session of the Society for the Study of Inebriety, held in the rooms of the Medical Society of London on October 12th, Dr. J. D. Rolleston delivered an address on alcoholism in ancient Greece and Rome. He remarked that as the scientific study of inebriety dated only from the middle of the nineteenth century, very little was to be gleaned from contemporary medical writers as to the prevalence and effects of alcoholism in classical antiquity. The chief sources of information are the poets, especially the gnomic writers, such as Theognis; the satirists, including Horace, Juvenal, Martial, Lucian, and the Greek Anthology; philosophers and moralists, such as Plato, Plutarch, and Seneca; and most of all the two encyclopaedic writers, Pliny the Elder and Athenaeus. Though there is some indication of the existence of chronic alcoholism, as is exemplified by passages in Pliny and Seneca and in the lives of certain individuals such as some of the Roman emperors, alcoholism in classical antiquity was mainly of a convivial character, and industrial alcoholism, apart from that associated with prostitution, was unknown. Dr. Rolleston quoted several passages from the classical writers dealing with the dysgenic influence of alcohol and other evil effects of drink on the community and the individual, especially the relation of inebriety to insanity, crime, and poverty, and the measures, often of a fanciful character, recommended by the ancients for the prevention and treatment of drunkenness. In conclusion, Dr. Rolleston showed that the alcoholism of classical antiquity differed from that of to-day by its predominance among the upper classes, the lack of legislative control, the absence of distilled liquors, which were not introduced until the fifteenth century, and the non-existence of syphilis, which in modern times was often contracted under the influence of alcohol, and was liable to run a severe course in alcoholic subjects.

DOSAGE OF ULTRA-VIOLET LIGHT.

For some time past the ever-increasing number of medical men actively engaged in radio-therapeutics have felt the need for a practical method of measuring the dosage of ultra-violet light. It must be remembered that not only has every patient a different susceptibility to the effect of these rays, but that the many varieties of lamp now on the market differ considerably both in the quality and quantity of the rays they emit. Not only that, but in course of use the output of all lamps falls off, in some cases slowly, in others more rapidly. To test the personal idiosyncrasy of the patient, which should be done in every case before beginning treatment, the only practical method is to expose a series of small areas of skin, each for a certain number of minutes varying from one to ten, and to note the result. This precaution will prevent a serious overdose being given at the outset of treatment. Fortunately, the consequences of an overdose of ultra-violet rays are not to be compared in seriousness with those of an overdose of *x* rays, but a painful sunburn is an unsatisfactory way of introducing a new treatment, and creates an unnecessary prejudice in the patient's mind. For testing the output of the lamp providing the rays many methods scientifically sound have been devised, but in general they are too

the more remote villages and districts the matrons had earned an honest penny by attending each other in their confinements, very much as the inhabitants eked out their livelihood by taking in each other's washing. As a result, obstetric disasters had been common, and in 1726 the Incorporation of Chirurgeons of Edinburgh had decided that an organized effort to train women for the office of midwives should be made without delay. An important minute of the Town Council of Edinburgh, dated February 9th, 1726, effected the foundation of the first chair of midwifery in the world. The minute ran as follows:

"The Council having considered the petition of Mr. Joseph Gibson, chirurgeon in Edinburgh, with a declaration under the hands of four doctors of medicine, setting forth the usefulness and necessity of instituting a profession of midwifery; as also an extract of an act of the Incorporation of Chirurgeons, shewing their approbation of the qualifications and capacity of Joseph Gibson, one of their number, for teaching the said art and science; they were fully convinced that it would be of great use and advantage to institute this profession; and being well satisfied with the ability and capacity of the said Joseph Gibson to discharge that office, they were of opinion that the Council should nominate and appoint him to be Professor of Midwifery in this city and privileges, with power to him to profess and teach the said art, in as large an extent as it is taught in any city or place where this profession is already instituted; and that he should be vested with the same privileges and immunities that are known to appertain to a professor of midwifery in any other well-regulated city or place; but that it should be expressly provided that he should have no fee or salary from this city out of its patrimony or revenue on account of his said profession. And having likewise considered that many fatal consequences have happened to women in childbirth and to their children through the ignorance and unskilfulness of midwives in this country and city, who enter upon that difficult sphere at their own hand, without the least trial taken of their knowledge of the principles upon which they are to practise that art, and that it would be a good service done to the community to put a stop to such practice, in order to prevent such mischiefs in time coming; they were of opinion that it should be enacted by the Council that no person hereafter should presume to enter on the practice of midwifery within this city and privileges till once they present to the magistrates a certificate under the hands of at least one doctor and one surgeon, who are at the time members of the College of Physicians or Incorporation of Chirurgeons of this city, bearing that they have so much of the knowledge of the grounds and principles of this art as warrants their entering upon the practice of it. . . ."

The City Fathers had not realized what an original step they were taking, for there were, as a matter of fact, no other such appointments in existence. The duties of Joseph Gibson, the first professor of midwifery, had been the teaching, not of medical students, but midwives, thus showing that the practice of midwifery was still at that date predominantly in the hands of midwives. Some thirty years after the foundation of the chair, Professor Thomas Young had given an unofficial course of midwifery for medical students concurrently with the instruction of midwives. He had also been the first to institute clinical teaching of obstetrics in Edinburgh, and he was permitted, at his own expense, by the managers of the infirmary, to fit up an attic room for four lying-in women or as many more as he could accommodate. This had been the origin of what ultimately, after many vicissitudes, developed into the Royal Maternity Hospital, erected in memory of Sir James Simpson. England had lagged far behind Scotland and the Continent, so that it could not boast a university professorship of midwifery, and, what was still more startling, until the Medical Act of 1866 it was unnecessary for the medical student to be qualified in midwifery before being registered as a practitioner. Gynaecology, as a separate branch of surgery, had been non-existent until about the time of Sir James Young Simpson, the sixth and most distinguished occupant of the Edinburgh chair. In 1809, however, thirty years before Simpson was appointed, an epoch-making operation had taken place in the backwoods of Kentucky. Edinburgh had a special godmotherly interest in it inasmuch as Ephraim McDowell, who performed this first ovariotomy, had studied at Edinburgh, and had been profoundly inspired while a student in this city by the great John Bell, who was then one of the most eminent surgeons of the day.

Pioneers of Modern Times.

The additional factors which had been necessary to promote the growth of surgery and gynaecology to their modern dimensions had been provided respectively by Sir James Simpson when he discovered the anaesthetic properties of chloroform in his dining-room at 52, Queen Street, and by Pasteur and Lister in the discovery of bacteria and of the antiseptic method for combating their evil effects in surgery. A profoundly important step had been the discovery of the fact that what was known as puerperal fever was the same as the condition called surgical fever—namely, a condition of bacterial infection occurring in wounded tissues. Many names, such as those of Charles White of Manchester, Gordon of Aberdeen, and Oliver Wendell Holmes, had been associated with the idea of infectivity in puerperal fever, but its nature had been discovered and brought prominently before the notice of the profession by a Hungarian, Semmelweiss, whose work had been supplemented by the discoveries of Pasteur and Lister. The lecturer referred to the activity in the chair of Sir Alexander Simpson, nephew of Sir James Simpson, and to Matthews Duncan, Milne Murray, and others of the Edinburgh obstetric school. With regard to Sir Halliday Croom, he said that no one he had ever known had shown such inspiring devotion to the teaching of his students. He mentioned especially the work of the late Dr. John William Ballantyne, who had been lecturer in midwifery to women students during Halliday Croom's tenure of the chair. Ballantyne had not been gifted with the talents which made a successful practitioner, but he had been endowed with what was more rare, the vision of the pioneer. He had founded what was practically a new branch of pathology—namely, ante-natal pathology—and for many years he had ploughed his lonely furrow through the arid wastes of this most obscure and difficult subject. Ultimately it had been given to him to recognize what might now be said to be obvious, but what perhaps for that very reason had not been observed until he pointed it out—namely, the possibility of preventing many of the accidents and complications of labour and of the diseases complicating pregnancy. He had been one of the small band who definitely started the new development of ante-natal supervision and thereby widened the whole conception of midwifery. Nowadays the ante-natal department was one of the most important parts of every maternity hospital, and there was no phase of obstetrics which had been more fruitful in good results in the preservation of both maternal and infant life. As a prophet, Ballantyne had been favoured by being allowed to advance some little distance into the promised land which his vision had described. But death claimed him while as yet the full fruits of his labours were still to come. It was a particular satisfaction that their own Royal Maternity Hospital, which was erected to the memory of Sir James Simpson, in gratitude for the immortal contribution which he had made to medical and obstetrical science, should now have, as a complementary part, a Ballantyne Memorial in an ante-natal department, which might confidently be stated to be second to none in the United Kingdom.

THE FREEDOM OF MEDICINE.

Introductory Address at the University of Durham College of Medicine, Newcastle-on-Tyne.

BY

C. O. HAWTHORNE, M.D., F.R.C.P., F.R.F.P.S.

[*Abridged.*]

Whatever be the several stages you as individuals have reached in the undergraduate world, it is for all a common experience that your school days have ended; that you have entered as undergraduates in the life of a university; and that you are looking forward to the day when lecturers and examiners shall cease from troubling and, as you fondly imagine, weary graduates shall be at rest. Each of these three stages has, of course, certain features peculiar to itself, but, broadly speaking, it may be said that as you pass from one to the next you move into a widening area of personal freedom. You have now definitely reached the second stage.

Opening of the Winter Session.

THE PATHWAY OF OBSTETRICS.

Inaugural Address at the University of Edinburgh.

BY

R. W. JOHNSTONE, C.B.E., M.A., M.D., F.R.C.S.Ed.,
Professor of Midwifery and the Diseases of Women.

[*Abstract.*]

Professor Johnstone delivered his inaugural lecture, upon the "The pathway of obstetrics," on October 8th, in the music classroom of Edinburgh University. He began by saying that every student who exercised the gift of imagination must feel some peculiar quickening of interest when he approached the study of midwifery, for there was no sentient human heart that failed to respond to the thrill of this everyday miracle. The beginning and ending of things ever made a greater appeal than did the middle, just as sunrise and sunset inspired the poet to greater heights than did the glare of noonday. Birth and death, which formed the apparent beginning and the apparent end of life, excited a peculiar interest and a profound curiosity in everyone, no matter whether they were regarded from the spiritual, the philosophical, or the purely physical point of view. Students would feel that in midwifery they had a study which linked together all their medical and surgical studies in relation to the span of human life and gave them a coherence which elsewhere might be lacking. In this subject were interpreted in terms of medical practice the care of the infant, the prevention of diseases such as rickets, the hygiene of childhood, the proper supervision of the critical period of adolescence, all of which were directed to making the rising generation fit parents for their successors. These phases of practice were, indeed, in a very real sense, the earliest stages of the ante-natal supervision which was the crowning phase of modern obstetrics. Then came the actual obstetric attendance during the dangers of childbirth and the prudent guidance which restored the mother uninjured to her ordinary life, or, it might be, the gynaecological art which was called upon to repair inevitable damage. So this obstetric art went on from one generation to another in a cycle. Midwifery might be spoken of as consisting of a science and an art, the science being the collected knowledge of ascertained facts, while the art was the practical skill guided by that knowledge. In regard to midwifery, they had the curious paradox that while it must in the nature of things have been almost the earliest of all medical arts, yet so far as recorded medical history revealed, its science hardly began to grow until some two hundred years ago.

The Dark Age of Midwifery.

Midwifery was originally in the hands of the female sex, and the "medicine-man," priest, or physician, according to the state of culture reached, was never called in until matters were so grave that all help was practically useless. The effect of this almost exclusively female practice had been very far-reaching, and in the Dark Ages they found that the knowledge of midwifery had been almost totally extinguished. Accordingly, mediaeval midwifery formed a ghastly picture. William Clowes, the most distinguished English surgeon in the reign of Queen Elizabeth, had said that surgery was practised by: "tinkers, tooth-drawers, peddlers, ostlers, carters, horse gelders, and horse leeches, idiots, apple-squires, broom-men, bawds, witches, conjurers, sooth-sayers, and sow-gelders, rogues, rat-catchers, runagates, and proctors of spittle-houses." This was bad, but the worst phase of Renaissance medical practice had been that of obstetrics. In normal labour the woman had an even chance, but in difficult labour she was usually butchered to death if attended by one of the Sairey Gamps of the time or by one of the vagabond surgeons. In 1580 a law had been passed in Germany to prevent shepherds and herdsmen from attending obstetric cases, and the Renaissance pictures showed that the lying-in rooms were crowded with people bustling in every direction and giving the general impression of all sorts of female fussiness.

In common with all other branches of knowledge, obstetric science had been stimulated by the invention of the printing press, although it did not keep pace with the growth of medical knowledge in general. There had been an actual prejudice against the learning and teaching of midwifery in these early days, and this must have persisted in a blatant form in Scotland as late as the end of the eighteenth century. Professor Hamilton, who occupied the chair at Edinburgh from 1780 to 1800, had spoken of the great service done by Professor Thomas Young, his predecessor, "by dissipating the prejudice which existed against the necessity of instructing midwives. Even they who pretended to the sacred name of philosophers joined in the prejudice. Dame Nature, they said, is the proper midwife, and nobody can be better qualified to attend to her dictates than Dame Ignorance."

Advance of Obstetric Knowledge.

Despite all handicaps, obstetric knowledge had slowly increased during the seventeenth and eighteenth centuries. Increased knowledge had tended to favour the handing over of obstetric cases to the trained male physician, and the increased experience in practical midwifery so gained by the male physician had tended to foster the growth of real science. This had only been achieved after a hundred years of wordy and acrimonious warfare, of which a faint echo could be perceived in the amusing description given in *Tristram Shandy* of the circumstances surrounding Tristram's birth. Much of the credit for overcoming this prejudice belonged to a Lanarkshire Scot, William Smellie, who had gone to London and become the most prominent obstetrician of his day—indeed, one of the most prominent obstetricians of any day.

One special fact which had done much to hasten the transference of obstetric practice from the midwife to the trained obstetric physician was the invention of the midwifery forceps by Peter Chamberlen, a London physician of Huguenot origin, in the end of the sixteenth century. In most cases Nature had ordained that the child should be born head first, but up to his time no method had been discovered of expediting the birth of the child in cases of delayed or obstructed labour which did not lead directly to its death through injury, or involved its being turned in the womb and extracted feet first. The latter operation, podalic version, had been known to the Greek and Arabian physicians, and had been rediscovered by the great French surgeon Ambroise Paré in 1550. Although it was still performed in some cases with the best results, it was a formidable proceeding in comparison to the application to the child's head of the forceps, which was the modern successor to Chamberlen's instrument. The significance of the discovery of the forceps had been, first, that it was an enormously important forward step, and secondly, that it had become manifest that the use of this beneficial instrument could not be entrusted to the hands of an untrained attendant. It had been a reproach, however, of the Chamberlens that the discovery had been kept a secret in their family for four generations, as a means of increasing their professional reputation and as a source of private gain. Consequently, the nature and construction of midwifery forceps had not become generally known until the beginning of the eighteenth century. From this time the science had begun to grow under the cultivation of men like Mauriceau and Deventer, Smellie, Charles White, Fielding Ould, and others.

Scotland, at the beginning of the eighteenth century, had been a very poor country, and the conditions for the development of scientific obstetrics were less favourable than in wealthier England. The great majority of the cases of childbirth were attended by midwives only, who were called "howdies," and these apparently had been devoid of any training in the science of obstetrics, while in

has surely a presumption in its favour. Beyond this admission, however, we must allow no restriction on liberty. No doctrine or practice in medicine, however ancient its lineage, however dignified its sponsor, or however favoured by the Fathers and Brethren, is or ought to be secure from critical or even destructive attack. The young practitioner may reasonably be expected to give some heed to the ancient ways, but the time may come when he refuses to walk therein and elects to challenge the accuracy or wisdom of the older guides. This is his heritage of freedom, and he can claim it without fear either of authoritative censure or of penal consequences.

Independence and Authority.

What I here claim, then, is that in medicine there is a free and open atmosphere for the man who has some new truth to teach, whether in the area of doctrine or in that of practice. Granted that he is of good faith, that his work is real and not pretence, and that he can give reasons for the faith that is in him, he will sooner or later command an audience and disciples. He may perhaps flutter the senior dovecots, not wholly to their disadvantage, for it is the duty, perhaps not always fulfilled, of those of us who feel in greater or less degree the chilling and numbing effects of years to keep an open mind, and indeed, an attitude of encouragement towards the independent enterprises of the younger, and, it may be, the wiser generation. There is no halfway house. Either men must be free to think and speak the thing they will, uncomfortable as this may be for established opinion, or they must be liable to control or suppression by authority. Medicine has had its experience of this latter discipline, and has definitely abandoned it as antagonistic, not merely to freedom, but also to truth. If your desire is for a life of mental calm, where "all things always seem the same"; or if you wish a path and conduct ever dictated by superior authority, you had better seek these soporific ambitions in some profession other than that of medicine. Do not indulge the vain hope that freedom and fixture may somehow be combined. But if, as I gather, your choice is for the open fields and the wide spaces of medicine, be not negligent of your heritage of freedom. It is well for you, even in early days, to recognize these liberties and to cultivate them, not merely with discretion but also with courage. Medicine does not desire disciples drilled to a mere mechanical response to the orders of the sergeant-major. On the contrary, individual initiative has here a full opportunity, and it is your duty and interest to take advantage of this position and to cultivate, as you may, independent thinking and personal originality.

To sum up my present point I would say: You are to succeed to a great heritage of freedom; in that freedom respect by all means the traditions of the elders; but let these neither overawe you nor dismay you, nor bind you to a mechanical and unthinking obedience. I add that the attainment of this personal capacity is not achieved except by unrelenting effort: he who would see with his own eyes must learn to look without the use of other people's spectacles. In medicine you have this freedom if you care to use it. Ill would it become me to preach from this place a revolt against constituted authorities. Within limits we must all submit. But let it be remembered that originality of view and independence of judgement are qualities which, apart from their interest to the individual who possesses them, have a high value to the community and to the race. There is a large field of opportunity for them in medicine.

Freedom of Opinion.

The claim, then, is for freedom of opinion. Let us be quite sure of the meaning of our terms. Opinion is a word in everybody's mouth, though often it means nothing more than a personal taste or prejudice or preference, or an echo from a printed page. Our friends and acquaintances for the most part have what they call their "opinions" on almost every topic. They may modestly confess that they know little or nothing about the subject, but they are more than ready to tell us what they think. Of these exercises the medical practitioner has indeed special experience. Now in medicine when we speak of "opinion" we mean something precise. A medical or scientific opinion may be defined as a mental conviction resting upon an intelligible basis; it is a judgement, inference, or conclusion resulting from the consideration of evidence. This is the sense in which the practitioner forms and acts upon his opinion in any individual case, or in which he gives his assent to any general medical proposition. Hence, when we say that in medicine there is liberty of opinion, we mean a rational and ordered liberty, exercised not on mere inclination or whim or fancy, but exercised in accordance with the logic and teaching of evidence. Observe that this statement does not justify an opinion on the ground of its accuracy. So long as men are fallible they will make mistakes, due perhaps to incomplete knowledge, perhaps to inaccurate information, perhaps to imperfect reasoning. An opinion in the sense here defined is not always right, but it is reached by an orderly and reasonable route, and if it proves to be inaccurate the localization of the flaw can be determined when all the facts are known. On the other hand, a mere guess may be right, and this, indeed, is one of its particular dangers, for the arrival of the lucky chance is apt to lead the author of the guess, whether he professes a diagnosis or backs a winner, to imagine himself a very smart fellow, forgetful of the truth that "winning tricks is not always proof of good play."

But with these irregular and illogical methods we are not concerned when we set up a plea for liberty of opinion within the province of medicine. What we mean by such liberty is the right of any practitioner, unhindered by authority, to scrutinize and cross-examine any proposition, to collect his own evidence, to form his own conclusions, and to push these if he will against current doctrines and practices. Truth unfettered, and spelt with a capital T, is the sole aim of medical inquiry, whether this is directed to an individual clinical problem or to a wide and general proposition. The lawyer seeks for truth according to a pre-determined standard and after having decided in advance what shall, and what shall not, be accepted as evidence, while for the ecclesiastic truth is already known, and the formal statements of it must neither be questioned nor challenged. But the doctor knows no such restrictions. He has to suffer much uncertainty and doubt, and is continually aware how scanty is his knowledge and how limited are his powers. On the other side of the account he has this advantage, that he is never under an obligation to pretend to know what he knows he does not know, or to profess a conclusion on inadequate evidence. I am not questioning the advantage, or even the necessity, in certain spheres of life of the closing of issues by a final and conclusive voice to which all must give attention. But in medicine there is neither a House of Lords nor a College of Cardinals, and it would be an ill day for medical science and medical practitioners, and for the general public, were any such organization called into existence.

Such, then, is the liberty to which you will be elected. It is not a riotous and tumultuous liberty. But it is a full liberty for honest work and for honest men. Admittedly it may be abused, and indeed few ambitions are easier than to be a successful medical humbug. Medicine offers two large opportunities—the opportunity to observe and to work, and the opportunity to pretend and to prance and to pose, this latter not without its rewards in the limelight. If the worker is to have the freedom that he needs, we must take our chance of the shams and simpletons. The good grain must be free to grow even though this means an opening for occasional tares. The claim therefore is, not that liberty carries no risks, but that it exists for those who have the courage to use it.

Opinion and Action: The Human Factor.

Perhaps it may be suggested that in a life where there is much liberty of prophesying, and where you may often be called upon to revise your conclusions and convictions, there cannot be much mental comfort. That is a perfectly fair comment, and for those for whom "there is no joy but calm" a medical career offers no inviting retreat. On the other hand, the consciousness of imperfect knowledge and of ignorance is a stimulus to initiative and enterprise and endeavour, and is it not largely in the

Freedom in Undergraduate Life.

It is the youth who learns to obey that is the father of the man who is able to command. At the present moment you as medical students stand midway between these two terms. With the termination of school discipline you have stepped into the larger freedom of the undergraduate. Possibly, even yet, you may sometimes be more conscious of limitations than of liberties, and may complain of the irksome restraint of compulsory lectures and compulsory examinations. Nevertheless, the university gives you a wider freedom than the school, and this is true both of conduct and of opinion. The apprentice may now, as he will, be either industrious or idle, and this perhaps without any immediate reward or penalty, though sooner or later chickens come home to roost and acts carry their inevitable consequences. In the field of opinion, or at least in the expression of opinion, the undergraduate admittedly suffers some measure of restriction, more particularly in his contacts with examiners. The advantage of the last word in most questions rests with posterity; but this is not true of examinations. All the same, the atmosphere and influence of university life are towards the cultivation of a growing independence of judgement, the development of original views, and the assertion of personality. Especially valuable as educational agencies in these directions are the generous rivalries and loyal comradeships that you share with your fellows, the academic traditions that you inherit in common, and the activities and opportunities of your students' debating societies. In open controversy and criticism you are stimulated to think for yourselves, to advance arguments of your own, to contest the arguments of your fellows, and to cultivate ideas and the capacity of putting these into appealing and intelligible speech. The controversies may be fierce and the soft answer that turneth away wrath exceptional, but even in these asperities there is a training in the courtesies and proprieties of debate.

In short, the apparatus of a university has this purpose or end, to provide such a measure of freedom and such a degree of discipline that those who submit themselves to these opportunities shall be fitted for a still larger freedom and for a corresponding burden of responsibility. This ambition is not exhausted by mere technical efficiency, valuable and important as such efficiency necessarily is. To it must be added, by the deliberate cultivation of the faculties of observation and judgement, and by the voluntary practice of self-discipline, the development of a mental habit and outlook which applies its estimate of values to all departments of life. A university education is effected not merely, perhaps not mainly, by didactic instruction. Not less important is the agency which leaves the student a measure of freedom within which he may train himself and be trained by his fellows, and this in an atmosphere rich in the traditions of the past and keen with the questionings and the uncertainties of the present hour. My suggestion, therefore, is that in your university life, while there is still direction to which you must needs attend, and a series of tests to which you must needs submit, there is also an opportunity to train yourselves to use freedom both wisely and well, and thus to prove yourselves competent for a still larger liberty. More than ever before, your fates are in your own keeping, for the liberties you now enjoy as students of medicine and university graduates may be made, if you so will, an educational apparatus by which you may add to technical efficiency in your profession the virtues and advantages of the trained, the equal, and the philosophic mind.

Freedom in the Practice of Medicine.

And now, what is the larger freedom for which you are preparing? In what sense, and in what degree, will you enjoy individual freedom within the scope and function of medical practice? There is here, of course, a question of opinion and a question of action; and the proposition I wish to set up is that in both of these respects the medical practitioner is a free man. There are qualifications in fact, and to these I will allude in a moment, but in principle it is true, and we ought to be urgent to maintain it, that medicine offers a life where the individual judgement, the individual opinion, and the individual decision, are neither enforced on the one hand, nor restrained on the other, by an arbitrary, or quasi-infallible, or executive authority. There is no voice to which you must needs give heed that can inscribe on tables of stone a series of medical commandments, or that can compel your subscription to thirty-nine or some other number of articles. Whether for good or for ill, the life offered by medicine is a life of intellectual liberty where every honest man may hold his own convictions, and express his own judgements, and follow his own policy; and this without fear either of authoritative censure or of official excommunication. However dignified and commanding certain professional organizations may be, none of them has the skill or competence to discharge thunderbolts against the practitioner who chooses to exercise his right of private judgement.

Now while this claim may confidently be made to-day, medicine is not without experience of a very different order. For centuries there was no liberty in medicine. On the contrary, there was a fixed and rigid orthodoxy from which any venturesome heretic dissented at his peril. Very substantial penalties fell on any innovator who ventured to question the medical scripture according to Galen as this was written in the second century of the Christian era. The doctors, in short, like the theologians, had a fixed and authorized code of doctrine and practice, and, again like the theologians, they were ready to "prove their doctrines orthodox by apostolic blows and knocks." But from this position, defined by authority, and from the sterile and stereotyped life and atmosphere which it produced, medicine has long since freed itself, though not without vigorous struggles and bitter controversies. To-day there are in medicine no orthodox opinions to which we must needs subscribe, and no compelling voice competent to define a creed or to enforce a method of practice. Over all this wide field it is for the individual to exercise his own judgement, to frame his own opinion, and to take his own decision. Such is the freedom, and, note also, such is the responsibility, to which you will be called.

Restrictions on Liberty.

It may, perhaps, be objected that this definition of individual freedom in medicine is an extravagant or exaggerated one. Can anyone reasonably say, it may be asked, that the individual medical practitioner is quite free from authoritative control, and is at full liberty to entertain any views that commend themselves to his judgement, and free also to apply these views in the conduct of his practice? The answer to these questions is decidedly in the affirmative, though this is not to say that such liberty ought to be exercised as a mere personal eccentricity, or as an expression of ignorant and obstinate self-will. On the contrary, in this field as in others, a man must be prepared to defend his judgement by reasons and to justify his actions by results. He is free but he is responsible. There are certain limitations, it is true, but these are imposed by reason and logic and common sense, and not by any artificial bond or arbitrary authority. The limitations are in the nature of things. Thus, manifestly, a medical man is not free to poison a patient with opium or arsenic and then successfully to plead that in his opinion this proceeding was in the interests of the community; or, alternatively, that though he had indeed administered the poison, the responsibility for dying must be placed upon the patient. Neither in law nor in morals can ignorance, or stupidity, or carelessness, exhibited in a responsible situation, escape its due penalty by an attempt to take sanctuary under the protecting plea of the right of private judgement. The civil or criminal courts of the realm would make short work of such simplicity.

Again, beyond the bonds and limits of the law there are certain conditions which exercise a common-sense, or, if you will, a moral influence on medical liberty. It is true that there are in medicine no orthodoxies to which the faithful must needs adhere. On the other hand, there exist naturally and inevitably a number of doctrines and practices widely or almost universally accepted, and built on a more or less prolonged experience. A general consent of this order is a fact of much moment, and especially for the younger members of the profession. What exists and seems to have been tested by time and by many observers

advantageous theoretically, was undoubtedly open to serious objections. The practical objection of the increased expense and length of the curriculum necessary to obtain a qualification in medicine and surgery in addition to dentistry was difficult to meet without some modification in the medical and surgical requirements for this qualification by intending dentists; this, however, would be unsatisfactory, for any such concession would eventually defeat the aims of the change, and, indeed, would not be very different from the demands already made in some examinations for a dental degree. No doubt many dental students fully realized the great advantage of taking a medical qualification, and did so when this was financially possible. How those not so fortunate, though equally capable and deserving, could be assisted it was difficult to say. The objection that to require from those going in for a dental diploma an additional qualification in medicine and surgery would so diminish the number of qualified dentists as to be detrimental to the public interest was perhaps not quite so insuperable. Women had come into medicine, and after the war did so in such numbers that for the time being, at any rate, they were not so easily absorbed. In many respects they were well fitted for the dental profession, and by adopting it they might find a congenial career, and thus, to some extent, meet the demand for dental treatment.

It might be urged that dentistry was so special and so divorced from general medicine and surgery that it stood on a different footing from other specialties. But was it true that ophthalmology, laryngology, and otology depended more closely on medicine and surgery than did dentistry? Ophthalmology also was a very special subject, and so much concerned with optics that opticians without any medical qualification abounded; but they were unquestionably handicapped thereby. It should be remembered that ophthalmology was evolved out of medicine and surgery, and so remained a member of the family, whereas, at any rate since the revival of learning in the sixteenth century, dentistry grew up independently, partly because of its own special technical demands, partly from the aloof attitude of medicine; it was therefore commonly assumed that they were essentially different. A break with this tradition would be in the best interests of dentistry; to go further, there could surely be no doubt that if and when a dental diploma or degree was made a post-graduate qualification, the status and the utility of dentistry would be much enhanced. At present (and the future might well see an increase in this direction) a number of dentists were also qualified in medicine with advantage to their profession and to themselves. At present this worked well, or without any manifest bad effect, but would it remain so? As time went on and fresh ideas and developments arose, especially in pathology, might there not be a more obviously and popularly recognized division of dentists into two grades—those with and those without a medical qualification? It would be an evil day for dentistry if this differentiation ever became analogous to that between ophthalmologists and opticians. This question of a combined medical and dental qualification would in time, no doubt, become one of practical politics.

England and Wales.

Vital Statistics for 1925.

The Registrar-General's *Statistical Review of England and Wales for 1925*, Part I, Medical, was issued on October 8th. It is an octavo volume containing 520 pages, and can be obtained from the Stationery Office in London, Manchester, Cardiff, and Edinburgh, or through any bookseller, price 15s. It is stated in the course of the review that the birth rate, which since 1920 has shown a continuous decline, was 18.3 per 1,000 persons living in the year 1925. This rate was 0.5 per 1,000 below that of 1924 and, excepting the war years 1917 and 1918, was the lowest recorded since the establishment of civil registration. The death rate was 12.2 per 1,000 and was equal to that recorded in the previous year, but was 0.6 per 1,000 above the rate of 1923, which was the lowest on record. The infantile mortality rate was 75 per 1,000 births and also equalled that of 1924, but was 6 per 1,000 above the lowest rate, recorded in 1923. The death rate from tuberculosis showed a further decline and was the lowest yet recorded; the mortality from cancer was the highest on record. The mortality from influenza showed a substantial decline compared with the previous year, while that from encephalitis lethargica was slightly below the high rate of 1924. The death rates from measles, scarlet fever, whooping-cough, and diphtheria were all above those of 1924. The mortality from enteric fever was the lowest on record, and for the first time the mortality of the two sexes was equal.

Reconstruction of the Leamington Pump Room.

Sir Kingsley Wood, Parliamentary Secretary to the Ministry of Health, formally opened, on October 9th, the Leamington Royal Pump Room, which has been reconstructed and modernized at a cost of about £15,000. In addition to natural saline baths, the special treatments offered by Continental centres can now be obtained at Leamington, including various electrical, galvanic, radiant heat, paraffin wax, and ultra-violet ray therapeutical procedures. Sir Kingsley Wood referred to the fact that spa treatment for rheumatism and allied complaints had been available at Leamington for more than six centuries, and he thought the time had come for British spa treatment to be made available for all classes of the community. He mentioned that at the recent annual gathering of the friendly societies it was decided to ask the Government to include spa treatment as an additional national insurance benefit, and the Federation of British Spas had under consideration a scheme whereby they could treat about 30,000 people each year. He promised that careful and sympathetic consideration would be given to this scheme by the Ministry of Health. In supporting a vote of thanks to Sir Kingsley Wood, Dr. Fortescue Fox discussed the special characteristics of the saline content of the Leamington waters, and regretted the absence of facilities for systematic instruction in hydrotherapy in the universities and medical schools of Great Britain.

Presentation to Sir James Barr.

The annual inspection of the West Lancashire Voluntary Aid Detachment took place on October 2nd. Colonel Powell was the War Office inspector, and there was a good muster of V.A.D. nurses, who carried out various nursing operations in a V.A.D. hospital extemporized at the Liverpool Scottish headquarters. Sir James Barr, as county controller, was presented with a gold cigarette box inscribed: "Sir James Barr, C.B.E., D.L., M.D., for signal services in connexion with the V.A.D. of West Lancashire." Mrs. Tweedale of Rochdale, district lady superintendent, made a graceful speech, alluding to the untiring energy of Sir James Barr, and Mrs. Howard of Preston supported the resolution of thanks and appreciation accompanying the gift.

Small-pox in London.

A woman resident in St. Pancras, who had been previously visiting Paris, was admitted to the Royal Northern Hospital in Islington, on October 7th, with an ill-defined rash. On the 9th she was isolated, and on the 11th she was diagnosed as suffering from small-pox by Dr. G. Clark Trotter, medical officer of health for Islington, and Dr. W. McC. Wanklyn of the London County Council Health Department. Her stay in Paris covered the period September 11th to the 24th, which was considerably later than that of the Willesden patients, of whom mention was made in our issue of October 9th (p. 660). The date of infection of the St. Pancras patient is believed to be between September 22nd and 24th. Inquiries are being made in Paris, but it has not yet been possible to trace the source of infection, which is presumably still active. It is, further, noteworthy that, although the type of small-pox at present prevalent in Paris is mild, this is not the case with the patients in Willesden and St. Pancras; in the last patient the rash is of the confluent variety.

exercise of these activities that man gets in his life mental happiness and satisfaction? Again, there is room for the remark that to live among open questions and undecided issues is liable to weaken the power of decision and to paralyse the capacity for action. We must not deny that medicine is by no means free from issues on which a confident opinion in the present state of our knowledge is impossible. To halt between two conclusions is sometimes unavoidable, and when we don't know there is credit, and not discredit, in saying we don't know. But we must distinguish between academic reserve and practical action. The daily life of the doctor repeatedly presents situations in which decision and action are imperative, while a confident pathological interpretation of the facts is for the time being impossible. The doctor, in other words, has to meet emergencies which cannot await scientific discussion; his first charge (even more than the discovery of truth) is the welfare of his patient; and he may often have to act, and act strongly, on a mere balance of probabilities. Thus, while he learns that deliberate judgements and opinions must be based on considered evidence, he is taught equally that quick wits and resolve and courage and prompt action are essential in the practical business of life.

One other influence may be mentioned as tempering the mental questionings and debates of the medical atmosphere. It is that the doctor does his work not solely under the influence of the cold, dry light of scientific knowledge. Associated with this throughout is a consciousness of the mystery of pain and suffering and of the sense of tears in human affairs. There is a scientific problem to be contemplated at the bedside, and this has to be solved in accordance with the strict demands of evidence. But there is something more—the welfare, and even the fate, of one with whom we are conscious we share in greater or less degree a common lot. Human emotions and sympathies and hopes and fears and sufferings and endurance are facts not less certain than the branches of the femoral artery or the percussion limits of cardiac dullness, and the doctor has to study and weigh these agencies if he would be not merely a student of disease but also the stay and succour of the patient. While strict accuracy in observation and record are one influence in his life, not less real is the discipline which inculcates understanding and sympathy and helpfulness. Thus while the practitioner of medicine may, and indeed often must, in his quiet study dwell in the realm of philosophic doubt, equally in his active service he is stimulated to prove himself the prompt, the informed, and the sympathetic helper of those who in their sufferings and distress turn to him with confidence and hope.

What is the conclusion of the whole matter? That in the life offered by medicine there is freedom for honest work and honest thought; that this freedom necessarily implies a corresponding measure of personal responsibility; and that any undue tendency to mere academic debate is corrected by the demands of practical affairs and by the appeal and mystery of pain and the hazards of human life.

RELATIONS OF MEDICINE AND DENTISTRY.

SIR HUMPHRY ROLLESTON'S ADDRESS AT THE ROYAL DENTAL HOSPITAL.

At the Royal Dental Hospital of London School of Dental Surgery the scholarships, prizes, and certificates awarded during the winter and summer sessions, 1925-26, were distributed on October 4th by Sir Humphry Rolleston, Bart., K.C.B., Regius Professor of Physic in the University of Cambridge, who gave an address on the relations of medicine and dentistry.

Both medicine and dentistry, he said, had travelled far on their own lines during the last forty years, and had got into rather closer touch on their journey; but in the interests of each more intimate association was desirable. Not so long ago the bearing of dental disease and dental deficiencies on general medicine was regarded as mainly concerned with referred pain, dental headache, and the mechanical factor—namely, incomplete mastication and the consequent swallowing of hard lumps of food. A great change was effected by the recognition of the etiological importance of dental sepsis in systemic disease. This advance was in the first instance the outcome of the patient investigations into the pathology of pernicious anaemia by William Hunter, who, in 1900, described oral sepsis; out of this grew the more expanded conception of focal infection, and its importance was certainly not underestimated now. The employment of x rays in examination of the teeth for apical disease had shown the close association of these lesions with rheumatoid arthritis, fibrositis, and allied conditions, which annually cost the nation three million weeks of lost work among the insured population. Not only had dental science done much for practical medicine, but advances in medical knowledge had thrown light on the causation of dental disease.

Correlation of Dentistry and General Medicine.

Dentistry and its followers had a tendency, much more marked than in other branches of the healing art, to be isolated from general medicine and surgery. To some extent this might be excused by the contention that theoretically dentistry should be a prophylactic science and art, and if carried out in a perfect manner should prevent any medical or surgical complications. But it would be very long before this ideal could be realized, and its advent would be facilitated by a more intimate association with general medicine and surgery. While the dental out-patient departments of general hospitals nominally formed a connecting link, in ordinary hospitals they were almost purely treatment, not teaching, departments; and though the patients, of course, benefited, there had been little gain to the advancement of dental science and education. That there was a demand for dental schools in connexion with the general teaching hospitals had been proved by the success of the schools founded within the last forty years.

There were indeed good reasons for the close association of dental with medical schools. From the patient's point of view there was much to be gained by consultation, especially in cases on the border-line between dental and general medicine and surgery. The arrangements for treatment should be more intimately united. Beds should be provided for patients undergoing extensive extractions and operations on the jaws which might come within the province of the general surgeon, and could not be dealt with satisfactorily in the out-patient department; while patients suffering from complications requiring medical supervision should obviously be under the care of hospital physicians. The need for beds for dental patients had now been recognized by the Middlesex Hospital in the allotment of beds to its dental staff. In the interests of dental science dentistry must gain by correlation with other departments, and by the application of new knowledge primarily derived from workers in different lines of research, but nevertheless of far-reaching practical importance. Contact with physicians, surgeons, pathologists, bacteriologists, and biochemists should enable combined researches to be made into the influence of general disorders, such as those of infective, metabolic, deficiency, and endocrine origin, upon the teeth. Conversely there was still much to be done in critical investigation and accurate evaluation of the influence of dental disease and defects on the body as a whole. The Dental Board encouraged research and had recognized the principle of increasing the opportunities for correlation of dental with other branches of medical investigation by arranging for lectures on general anaesthesia during the past year. From the point of view of dental students, the opportunities of seeing the medical and surgical complications of dental disease and of becoming familiar with the general disorders which might cause dental changes were obviously provided in a general teaching hospital.

Medical Qualifications for Dentists.

In other special branches of the healing art a good general knowledge of medicine and surgery, as shown by a qualification to practise, was a *sine qua non*. This was not held to be necessary in dentistry, and such a change might appear revolutionary. Revolutions, however, were often salutary, and were then called reforms. But a compulsory medical qualification for all dentists, however

children between the ages of 1 and 5 years. During this period cases of deafness, blindness, and other ailments often began and were later found to be permanent afflictions. Another aspect of the work which ought to be developed was maternal work, for at the various ante-natal clinics there had been only 8,000 cases in the past year, with some 21,000 attendances. Every encouragement and assistance should be available at this critical time. The speaker then dealt with the question of rickets, which, he said, was a reproach to Great Britain as a whole and peculiarly so to Scotland. They were only at the beginning of an investigation into this disease, but one or two very hopeful avenues of attack had recently been opened up. The question of feeding children was most important, and last year the Board of Health had devoted an important chapter in its report to the question of light treatment. They had decided that these two investigations must be followed up, and committees in Edinburgh, Glasgow, and Aberdeen would extend their investigations into these subjects as opportunity offered. He had hopes that this investigation in Scotland might make a definite contribution to medical science which would be of advantage to the whole world.

Hospital Services in Scotland.

Representatives of hospitals and public authorities in Dumfries and Galloway attended a conference at Dumfries on October 7th, arranged by the Dumfries and Galloway Division of the British Medical Association, to discuss the question of a hospital policy for Scotland. The opening address was given by Dr. J. R. Drever, the Scottish Medical Secretary, who was a member of the Hospital Services Committee, which held several meetings last year to investigate this matter; frequent references have been made to the meetings of this committee in the Journal, and at Dumfries Dr. Drever outlined its general findings and invited the conference to make a careful study of them with reference to the local conditions in Dumfries and Galloway. The committee had reported that on the whole the institutional accommodation in Scotland for infectious diseases, including pulmonary tuberculosis, was approximately adequate, but that it was deficient in respect of non-pulmonary tuberculosis, measles, whooping-cough, and pneumonia. Only three or four authorities had so far provided maternity hospitals, the total number of beds being about seventy, but a similar number of beds in maternity homes for normal confinements had also been obtained. In view of the admitted fact that a very large number of the private dwellings in industrial areas were quite unsuitable for the conduct of confinements, a considerable increase in the provision of institutional beds was required. Passing to the consideration of the medical services afforded by the Poor Law authorities, Dr. Drever stated that, apart from Aberdeen and Glasgow, there were no beds provided by Poor Law authorities which were immediately available for general hospital purposes; it was generally agreed that the parish council was not the proper body to make further hospital provision, but that the health functions at present controlled by the parish councils should be transferred to the larger local authorities. Whereas in Glasgow in 1841 the hospitals were made use of by 17 per 1,000 of the population, in 1924 the figure had increased to 45 per 1,000. At the present time many thousand patients were unable to get, at the proper time, the hospital treatment they required, and the committee had concluded that a minimum of 3,600 beds ought to be added as soon as possible to the hospital provision of Scotland. This total covered the requirements of maternity and child welfare work, and 600 of these beds might reasonably be provided by the local authorities. For the establishment of 3,000 beds £1,800,000 would be required, exclusive of equipment charges and sites. The whole of this money could not be obtained under the present voluntary system, although the Scottish hospitals at present were perfectly solvent and had £4,000,000 of accumulated funds. The recommendation of the committee, therefore, was that a sum of £900,000 should be provided by the Government for capital purposes, the remaining £900,000, together with the cost of the sites and equipment, being provided from present voluntary sources. Wards for paying patients were also required, and Dr. Drever emphasized the value of increasing the close co-operation between local authorities and voluntary agencies.

Post-Graduate Medical Teaching in Glasgow.

The following arrangements have been made for post-graduate teaching in Glasgow from November to May, under the auspices of the Glasgow Post-Graduate Medical Association. Weekly demonstrations will be held on Wednesday afternoons, beginning on November 3rd, in medicine, surgery, obstetrics, and special subjects; the fee for this course is three guineas. Special courses have been arranged in ophthalmology, at the Glasgow Eye Infirmary, including a slit-lamp course for ophthalmic surgeons, during October and November, and a course qualifying for the diploma in ophthalmic medicine and surgery of the Royal Colleges of Physicians and Surgeons of England, from January till May, 1927. A special course at the Royal Hospital for Sick Children and the Royal Maternity and Women's Hospital will be held twice a week, on Tuesdays and Fridays, from November 23rd to December 17th inclusive. Instruction will be given on the preservation of the health of the mother and the newborn infant, and the subjects dealt with include the diagnosis and treatment of disease in the newborn, the relation of ante-natal complications and abnormal labour to the condition of the infant, and certain aspects of the pathology of the foetus and of the newborn child. Clinical assistantships are available during the winter months in most of the institutions taking part in the work of the association. Further information may be obtained from Dr. James Carslaw, secretary of the Glasgow Post-Graduate Medical Association, 6, Woodside Crescent, Glasgow.

Ireland.

Tyrone County Hospital.

Mr. Edward Thompson, F.R.C.S.I., in the course of his annual report on the Tyrone County Hospital, states that during the year 1925 considerable progress was made, as 101 more patients were admitted to the hospital than ever before without adding to the expense of maintenance. The patients admitted were scattered over the county in very fair average proportion. Considering the size of the unions, complaint has often been made that a hospital situated in Omagh is of no use to Cookstown or Dungannon; a hospital must be settled permanently somewhere, and what position, it is asked, could fulfil the necessary conditions better than a central position such as Omagh, with a railway junction connecting the whole county? It is important also to remember that the class of patient seeking relief at the County Hospital differs materially from those in district and other hospitals, because the great majority of them are serious surgical cases requiring operation, or acute medical cases, generally of a very difficult and troublesome nature. During the year 965 patients were admitted to the hospital; 437 were refused admission as incurable or not suitable. The average number of patients daily in hospital was 56, and their average stay in hospital 19.7 days. The expenditure amounted to £5,129, and of this sum £2,477 was earned by the Hospital Committee, leaving a balance of £2,652 granted by the county council, the cheapest and most useful expenditure of public money it is possible to imagine. If to this expenditure is added interest at 6 per cent. on £10,000 subscribed by the public to build the new hospital, it will be apparent that the income of the hospital about equals the county grant. The average cost of each bed occupied was £93 17s., and of each patient £5 6s. 9d. In anticipation of the coal strike, about forty tons of coal were laid in as a reserve, and if the cost of this, along with the payment of over £120 for repainting the hospital, is credited to this year's expenditure, it will be found that the total cost of the hospital for 1925 is considerably less than in the previous year, notwithstanding an increase of 9.5 per cent. in the number of patients

Scotland.

Opening of New Radiological Department at Edinburgh.

H.R.H. the Duke of York, on October 9th, paid a visit to Edinburgh, in the course of which he participated in various social functions, which included receiving the freedom of the city and the opening of a new department of the city gas works, which had cost a quarter of a million sterling. The visit commenced with the opening of the new radiological department in the Royal Infirmary of Edinburgh, which has just been completed. His Royal Highness and the Duchess of York were received at the Royal Infirmary by Lord Provost Sir William Sleigh, Sheriff Crole, convener of the Finance Committee, the Right Hon. Sir John Gilmour, Bt., Secretary of State for Scotland, and other members of the management and staff of the institution. The Lord Provost presided, and remarked that *x*-ray work had begun in the Royal Infirmary, Edinburgh, under Drs. Milne Murray and Dawson Turner in 1898. The first *x*-ray photograph had been taken on October 14th in that year, and in the course of the following year 600 *x*-ray examinations were made. The department then consisted of one room on the ground floor, and in these particulars a great contrast was presented by the present large department, and by the fact that over 23,000 examinations had been made during the past year. From 1909 the work had been carried on by Dr. Hope Fowler and Dr. Archibald McKendrick, until it had been decided to appoint for the present institution a whole-time radiologist, who would also conduct the teaching of radiology. Dr. Woodburn Morison had been appointed to this post, and at the same time had been made lecturer on radiology in the University of Edinburgh. Towards the construction of the building the Edinburgh Committee of the Scottish Branch of the British Red Cross Society had contributed the very handsome sum of £15,000, the total cost being estimated at £52,000. He desired to express the gratitude of the managers to Dr. Robert Knox of London, who had acted as honorary expert adviser in connexion with the scheme from its inception, and also to Sir James Hodsdon, who, as the convener of the Medical Electrical Committee of the Board, had devoted much time to supervising the erection of the buildings and the installation of the plant. The Duke of York, in declaring the department open, paid a tribute of praise and gratitude to the pioneers in radiological research. He reminded his audience that the Royal Infirmary was maintained entirely by voluntary contributions, and expressed his gratification that the total ordinary income had amounted in the preceding year to nearly £110,000, with an extraordinary income, made up of legacies and donations, amounting to over £75,000. He hoped that the institution would never suffer for want of moral and financial support, and offered his warmest congratulations to those responsible for what he regarded as a great achievement. The Duke and Duchess of York then made a tour of inspection of the department under the guidance of Dr. Woodburn Morison and Sir James Hodsdon.

The Building.

The site for the new building is between the surgical and medical sections of the Royal Infirmary, and is entered off a covered corridor joining the two. Owing to the difference in level, there is a slight gradient on the various floors. The building is approximately 160 feet in length, with an average width of 60 feet; it consists of a sunk basement and two floors over with a flat roof designed to carry a third floor if extensions are found necessary at a later date. The basement contains the generating electrical plant and main control boards, with mechanics' workshop and general storage rooms. On the ground floor are situated several *x*-ray screening and treatment rooms, lecture and demonstrating hall, photographic and dark rooms, and the various private rooms for the staff, waiting and examination rooms. On the upper floor, accommodation is provided for electrical and massage treatment, with well lighted rooms for remedial exercises, radium treatment, and artificial sunlight treatment. The structure of the building presents several novel features, designed especially with a view to furnishing the maximum of protection against the *x* rays. The construction is of steel framework with reinforced concrete floors and roof, and outer walls of stone with concrete dressings; the flat roof is covered with rock asphalt. For the protection of the operators and other members of the staff against constant exposure to the *x* rays, protective material has been incorporated in the walls of the *x*-ray rooms. Several experimental partition slabs were made and tested. Barium (barytes) was selected as giving the best results and being easily obtainable in sufficient quantity. The composition of the slabs finally selected as combining the greatest possible measure of strength and radiological protection was: 1 part rough sand, 2 parts engine ashes, 1 part Portland cement, 3 parts barytes. The slabs are of such a thickness as to weigh 37½ lb. per superficial foot, and each slab is adjusted by grooves to adjoining slabs. As a further protection, the walls were plastered on each side with a 5/8 inch coat of barium plaster, and the same plaster has been used for the ceilings and floors. The amount of protection afforded by these walls is equivalent approximately to that given by sheets of lead 4 mm. in thickness. The doors are of timber, covered with lead on each side, and all hinges, handles, etc., are fully protected. Observation windows in the various cubicles have been provided with lead glass, equivalent in protection to 4 mm. of lead. Heating is provided by a vacuum steam system, and ventilation is effected by extraction with high-speed electric fans. Fresh-air inlets are provided in all rooms at the ground level.

Teaching Department.

Besides the various pieces of apparatus for screening and radiography and for deep penetration work, and the apparatus for remedial exercises, ultra-violet light therapy and various forms of electrical application, special attention has been devoted to the teaching aspect of the institute. Radiology is to be taught as a definite special subject to the undergraduates, and a special diploma, D.R.Edin., has been instituted. For this diploma the candidate will take a post-graduate course in physics at the university and carry out practical work in the infirmary, the course extending over a period of about a year. A large room is provided for lecture purposes, suitably equipped with lantern viewing boxes, etc., and demonstrations can be given to small groups of students in smaller rooms. The staff of the department consists, in addition to Dr. Woodburn Morison (radiologist), of Dr. John O'Sullivan and Dr. W. Crichton Fothergill (assistant radiologists).

New Child Welfare Centre in Glasgow.

A child welfare centre established by the Glasgow corporation was opened by Dr. Walter E. Elliot, M.P., Under Secretary of State for Scotland, on October 5th. The Lord Provost, Sir Matthew W. Montgomery, presided, and said that one of the most important factors in improving the health of the people was to prevent disease. Although the death rate among infants had diminished considerably of late, he thought a great deal still required to be done. The Glasgow death rate of 102 per 1,000 compared very favourably with that of other large communities, but they hoped that the child welfare movement would produce a very large reduction even in this rate. Dr. Elliot, in declaring the centre open, said that while the infantile death rate was still falling, it was higher than it ought to be, and higher than the corresponding rate in England. Maternal mortality, however, was still high, and was not yet declining. In Scotland there were already 195 of these centres, and almost all large areas of population were now provided with them. The estimates for next year showed that about £218,000 was being spent on this work, of which about £120,000 was granted by the central authority. During last year about 20,000 children had attended these centres in Scotland, of whom about 14,000 were under 1 year of age. The aspect of the work which it was particularly desirable to develop was that for

MIDWIFERY IN GENERAL PRACTICE.

Sir,—I understand there is shortly to be in force a Regulation which lays down that every practitioner attending a midwifery case must notify such case to the medical officer of health if the temperature should be 100.4° for twenty-four hours; that he is to state what vaginal examinations he has made, also vaginal examinations made by others under him, and the names and addresses of such persons; and that he is to supply a kind of résumé of the health of the patient before and after confinement.

I am in a country practice, and my confinements amount to eighty or ninety a year, for which I receive £1 10s. each (when paid). There is no district nurse in the village and no qualified midwife. The people are poor working-class, and would be deeply insulted were I to demand a fee for ante-natal examination. After this Regulation comes into force my only course, as far as I can see, will be to drop midwifery work unless I can obtain the assistance of a qualified midwife.

Midwifery practice is slowly but surely slipping into the hands of certificated midwives. The majority of the doctors in this district, as in many others, have given up attending confinements among their poorer patients. This is partly, no doubt, because of the small fees, but largely, I believe, on account of the red tape now prevalent, and because the blame for whatever goes wrong is laid at the practitioner's door.

I may be old-fashioned, but I believe that midwifery should be in medical hands. In the first place, a midwife is to a very large extent precluded from using any means for alleviating pain; and secondly, in a great many abnormal cases the patient is kept much too long before the midwife calls in a doctor. In spite of the laudation of midwives which I have read, a curious fact remains unexplained. Why do better-class women invariably demand the services of a doctor in addition to those of the qualified nurse? Why are they not content to be attended by a midwife alone, like their poorer sisters? It is not wholly a matter of fees. To compare the services of a midwife, who only takes responsibility for normal or semi-normal cases, with those of the doctor, who is expected to undertake all cases, is absurd, for it is among the difficult cases that 90 per cent. of the trouble occurs.

It seems to me a very serious matter that working-class women should be deprived of the services of doctors, largely because we are so bound down by rules and regulations that midwifery practice has become a daily menace to our peace of mind, and medical men are refusing to have anything to do with it. It is time the general practitioner asserted himself to put an end to the unjust persecution he labours under; and the remedy does not consist in throwing overboard his responsibilities.—I am, etc.,

September 22nd. INQUIRER.

A WARM ENVIRONMENT FOR RHEUMATIC PATIENTS.

Sir,—Dr. Fortescue Fox has, under the above heading, drawn attention in the Journal of October 9th (p. 664) to the importance of giving "spa treatment" to rheumatic patients only under suitable conditions, and also to the detrimental effect of chill after treatment.

Having myself suffered acutely, from time to time, from various conditions generally included under the term "rheumatic," and having had "spa treatment" in various forms at several spas, health resorts, and hydrotherapeutic institutions, and also having prescribed and watched the effects of "spa treatment" in a large number of rheumatic patients, I can fully endorse Dr. Fortescue Fox's contentions.

The rheumatic patient is peculiarly sensitive to sudden temperature changes, and is generally responsive to treatment by heat, whether by thermal baths, radiant energy, diathermy, or by other methods, provided that they are carefully prescribed and efficiently administered under suitable conditions. Rest after a thermal treatment is essential. It should be adequate in duration and be taken in a room heated to a suitable temperature. Cold resting rooms are detrimental as cooling is too rapid, whereas overheated rooms are injurious in preventing efficient cooling. These and other points require careful consideration as "spa treatment" will probably be more popular in the future than it has been in the past, and also because it is possible that at no distant date it will be available for the large number of rheumatic cases which are entitled to medical benefit under the National Health Insurance scheme.—I am, etc.,

Torquay, Oct. 11th. K. R. Collis Hallowes, M.B.

SANATORIUM TREATMENT.

Sir,—May I be permitted to make a few observations in reply to the letters which have appeared in the Journal during the past few weeks in criticism of the recent paper on this subject in the *Annals of Eugenics*?

Dr. Walters (September 11th) says that "to arrive at reliable conclusions in such an inquiry it is essential to choose similar material in the two groups." It can never be possible in sociological investigations to secure exactly similar material, and hence much of the labour involved in the investigation was devoted to ensuring that such differences as existed between the groups compared owing to selection for sanatorium treatment should be adequately corrected for, and to this end the ten factors of age and sex, stage of disease and severity of symptoms, nutrition, financial resources, grade and cleanliness of house, degree of overcrowding, and home ties, were all examined in detail, and, where necessary, allowed for. Dr. Walters considers that these, though relevant, do not cover the whole ground, but he does not suggest what factors have been omitted, and I think it is a reasonable assumption that the indefinable factors could have, in comparison with those named, very little influence on the relative progress of the groups. His objection that the two groups were not mutually exclusive, because the sanatorium-treated received in addition other forms of treatment before or after their stay there, fails on the grounds of general logic. Thus, in comparing groups of patients under treatment of various kinds for a period of x years we found that those who had dispensary or home treatment for the whole x years fared slightly better if anything than those who had sanatorium treatment for s years *plus* dispensary or home treatment for the remaining $(x-s)$ years; both these groups had in common non-sanatorium treatment for $(x-s)$ years, hence it follows that the differences in progress arose from the remaining s years, and those who spent this period in sanatorium fared no better than those who spent it in the other forms of treatment. To put it in another way, if 1,000 patients treated with 10-grain powders consisting of drugs A and B in varying proportions fare no better than 1,000 patients treated with 10-grain powders of A alone, it must logically follow that B alone is no more effective than A alone. An obvious retort is that the dose of B was never large enough to accomplish anything; but I would point out that the *average* period spent at sanatorium in our material was six months, an average considerably higher than that for patients treated, for example, by the Lancashire County Council. Had we not better frankly admit that there are small hopes indeed that any large group of patients are ever likely to be persuaded to spend more than an average of six months in a municipal sanatorium, however excellent it may be?

Dr. Gillespie (September 18th) objects that a considerable proportion of the patients were lost sight of before six years had elapsed; that the limiting period for classing a patient as "sanatorium-treated" was taken as low as fourteen days; and that the presence or absence of tubercle bacilli in the sputum was not made the indispensable criterion for diagnosis. The correlation method, by which the time under observation was made constant by partial correlation, overcame the first of these objections entirely, and the results confirmed those arrived at by the other methods. The objection to a fortnight as limiting period has been already answered on logical grounds, and, moreover, since there was found to be no correlation between time spent at sanatorium and progress, the choice of this arbitrary point of division makes no difference to the conclusions. If it were possible to confirm every diagnosis by the finding of tubercle bacilli in the sputum, it would, of course, greatly simplify the problem both for the

admitted. This is the last year in which a reduced expenditure can be expected, because owing to the demand of the Northern Local Government Board as regards audit, and similar demands on the part of the Nursing Council, a number of new officials will be necessary, and the extra cost, it is estimated, cannot be less than £1,000 a year. The average cost for the year per patient is the lowest of any county hospital in Northern Ireland. The number of major operations performed during the year was 425; this included 47 operations for the removal of appendixes, with 42 successful results; 13 operations for the radical cure of hernia; 31 curettings of uterus; 25 laparotomies; and 4 operations for ruptured stomach.

Gynaecological and Obstetrical Congress in Dublin.

A fortnight ago we gave an account of the centenary celebrations of the Coombe Lying-in Hospital, Dublin, and mentioned the subjects and authors of papers read during the international gynaecological and obstetrical congress held in connexion with the celebrations. The proceedings of the congress are to be published as a special supplement to the *Irish Journal of Medical Science*, which, it is expected, will be ready for issue shortly. Copies (5s. 6d. post free) can be obtained on application to the Manager, at Parkgate Printing Works, Dublin. The September issue of the *Irish Journal of Medical Science* contained a special illustrated account of the congress. This will be sent also if the postal order is increased to 7s. 6d.

Correspondence.

DIAGNOSIS OF SMALL-POX.

Sir,—In view of recent happenings in the matter of small-pox, may I make a strong appeal to your readers to help to make known the elements of small-pox diagnosis to every one of our colleagues in the profession? In 1913 I wrote:

"It is essential to realize the mischief which may be done by unrecognized cases of small-pox. There is hardly any disease of which the prompt recognition is more important to the general community. Almost every outbreak in London in recent years has been started, or propagated and prolonged, by unrecognized cases." (*How to Diagnose Small-pox*, p. 1.)

Our profession has made a remarkable response to those indications. Missed cases are strikingly fewer than they used to be; but for that very reason they are now all the more conspicuous. Our principal duty, I submit, at a time like the present is to make sure that we have done all in our power to make the necessary knowledge known. Speaking for myself, although something has been done, there is much more that I should like to have been able to do. This is the point. Every qualified practitioner in the kingdom should have a knowledge of the simple groundwork of small-pox diagnosis in his hands and in his head. It is more imperative than a knowledge of the femoral artery.

We all know the anxiety and risk of being unprepared to meet a possible emergency—the risk of losing patient, reputation, and practice. That unpreparedness should never be allowed to continue if it can possibly be remedied. With this in view, I ask your permission again to mention two items especially. One a booklet termed *Small-pox Notes for Medical Practitioners, with Hints on Diagnosis*, price 8d.; the other a reprint of a post-graduate lecture, entitled *The Accurate Diagnosis of Small-pox*, price 6d. Both are obtainable from either the *Medical Officer*, 36, Whitefriars Street, E.C., or from George Wareham, 1, Budge Row, Cannon Street, E.C.4. To overcome the difficulty caused by an author having to mention his own works, and other difficulties in connexion with their distribution, their issue is being handed over to the Small-pox Clearance Voluntary Fund, of which for the time being I am honorary secretary. The main aim of this fund is the complete clearance of small-pox out of the country, that being a business-like and practical proposition.

Some 3,000 practitioners have been provided with one or the other of the above-mentioned booklets so far, principally owing to the fact that many public authorities, on the recommendation of their responsible officers, have distributed copies to all the practitioners in their respective areas; an eminently reasonable proceeding, considering the value of the public service rendered by practitioners in this field of work. And in many cases this precaution has been wisely taken before the appearance of small-pox.

Reports show that such an issue is greatly appreciated. Practitioners are forewarned and forearmed. Their own confidence and standing are increased, the hands of the medical officers of health are strengthened, and, generally speaking, there is a heightening of the efficiency of the whole antismall-pox line, which at the present time is the sole barrier standing between our people and the catastrophe of a small-pox epidemic.—I am, etc.,

London, W.6, Oct. 11th. W. McC. Wanklyn.

INTESTINAL DIVERTICULA.

Sir,—Dr. A. H. Rutherford, in your issue of September 11th (p. 502), suggests that some of the multiple diverticula of the colon described by us (British Medical Journal, 1926, vol. i, p. 130) are potential "food pouches or crypto-saks" . . . "caused by the purse-string action of muscular fibres which, on their contraction, form a pouch or sac, into which semi-fluid faeces are drawn and where they become inspissated." We have delayed in replying in order to obtain and peruse the book to which he refers. We have now read the interesting account therein of observations made through a large artificial anus at the caecum (*The Ileo-caecal Valve*, A. H. Rutherford, London, 1914). On page 30 it is stated that a

"pencil of firm faeces, 7.5 millimetres in diameter and 6 centimetres in length, was one day seen to be pressed out of an apparent round orifice in the wall of the caecum. This was pressed out with considerable force in a direction at right angles to the surface of the bowel, evidently moulded by the circular aperture through which it emerged. After the faecal mass had been extruded, no orifice, however, could be discovered, and the spot where it had come from had the same appearance as the rest of the intestine. The nurse in charge told me she frequently observed this appearance in different positions of the colon, and it had no relation to the site of the ileo-caecal orifice, but was noticeable in an area nearer the rectum."

Such a pencil of faeces might be discharged from one of the large multiple diverticula of the colon such as our paper dealt with. We have published a picture in which such pencils can be seen (*Quart. Journ. Med.*, 1925, xix, Fig. 26, Plate 4).

Dr. Rutherford states that potential food pouches "occur in numbers along the inner wall of the large intestine"; and suggests that these, if diseased, may give rise to established diverticula. In the radiological examination of about 3,000 large bowels during life we have not observed such pouches other than (1) the normal haustra, (2) the rare cases of traction or other single diverticula, or (3) the appearances we have described as diverticulosis.

If pockets such as the crypto-saks of Dr. Rutherford became diseased to form diverticula, the latter would from the beginning be of large size; whereas early diverticula are minute and can be seen to enlarge as time goes on. Tiny pockets are nearly always found near fully developed ones.

We should expect also that most, or all, of the large diverticula, if formed from "crypto-saks," would retain some muscular power, but this is not so. It was observed in serial pictures of our case, illustrated in Fig. 10, and referred to by Dr. Rutherford, that the small diverticula showed slight contraction of their bodies and necks, whilst the bigger pouches appeared inert, even during active contractions of the haustra from which they arose. It is true that in some cases comparatively large diverticula have been observed to empty, and sometimes to empty in groups; but we do not regard such an observation as showing that the pouches were part of the normal structure of the bowel.

As regards the wall of the bowel, which was "full of holes," as observed by the nurse, but usually appeared normal to the doctor, the orifices of diverticula which are not discharging are in life—for example, with the sigmoidoscope—or after death difficult to see. There is nothing in the account to exclude the possibility that the bowel of Dr. Rutherford's case was the seat of all stages of the disease.—We are, etc.,

E. I. Spriggs.
O. A. Marxer.

Ruthin Castle, North Wales, Oct. 8th

Obituary.

JAMES BARRY BALL, M.D., F.R.C.P.,

Consulting Physician, Throat, Nose and Ear Department, West London Hospital.

Dr. James Barry Ball, who died at his residence at Abingdon, Berks, on October 2nd, aged 77, was born in Ireland in 1849, and received his medical education at University College, London. He obtained the diplomas of M.R.C.S.Eng. in 1870, and M.R.C.P.Lond. in 1885, and was elected F.R.C.P. in 1907. He graduated M.B.Lond. in 1871, proceeding M.D. in the following year.

He first entered general practice in Brixton, but in 1885 was appointed assistant physician to the West London Hospital. Two years later he was given charge of the throat and nose department, and of the ear department when that was added later. In 1905 he was appointed consulting physician and a member of the board of management. His other appointments included those of consulting physician to the Hospital of SS. John and Elizabeth, lecturer in diseases of the nose, throat, and ear to the West London Post-Graduate College, and examiner in laryngology and otology to the Royal Army Medical College. He was the author of a *Handbook of Diseases of the Nose and Pharynx*, and contributed articles to *Quain's Dictionary of Medicine* and to the *Transactions of the West London Medico-Chirurgical Society*. Dr. Ball was at one time a member of the British Medical Association, and in 1907 was a Vice-President of the Section of Laryngology, Otology, and Rhinology at the Annual Meeting of the Association at Exeter. He was much liked during his long period of practice in London, both by his brother specialists and by other members of the profession with whom he came in contact. Though his manner was always conciliatory, he held the opinions at which he arrived with tenacity and did not hesitate to express them when called upon. He leaves a widow and one daughter.

Dr. Charles George Maclagan, who died recently, was born in 1860, and was educated at Berwick Grammar School and Edinburgh University, where he graduated M.B., C.M. in 1883. Until his father's death he was associated with him in his practice in Berwick-on-Tweed, and later continued it by himself. He held the appointment of medical officer of health for Berwick, and was also an Admiralty surgeon. He had been surgeon captain in the Volunteers; during the late war he was chairman of the military tribunal; he was also chairman of the Berwick Infirmary during the whole war period. In addition to his medical work he took an active part in public life, being elected to the Berwick Town Council in 1897 and raised to the bench of aldermen in 1909. He held the post of sheriff in 1903, and was mayor in 1908, 1921, and 1922. He was appointed a justice of the peace in 1914, was chairman of the Berwick Education Board, and later a member of the Education Committee of Northumberland, serving also on the county Panel Committee. For many years he was an active supporter of the British Medical Association. He held the post of president of the North of England Branch in 1888 and in 1923; he was chairman of the North Northumberland Division in 1916, and representative on the Branch Council from 1905 to 1919.

Dr. Louis Estevan Green de Woolfson, who died on September 11th, received his medical education at St. Thomas's Hospital and in Paris, and obtained the L.S.A. in 1881, and L.R.F.P.S.Glas. and L.M. in 1883. After conducting a large practice in Shrewsbury he moved to Swansea, and later to London. At one time or another he held the appointments of assistant surgeon to the Shropshire Eye, Ear, and Throat Hospital, medical officer of health for Wednesfield, surgeon in charge of the ear, nose, and throat department in the Queen's Hospital for Children, and surgeon to the ear, nose, and throat clinic, Hockley. He was an examiner for the St. John Ambulance Association, and ambulance surgeon to the G.W. and L.N.W. Railway services. Dr. de Woolfson was a member of the Royal Institute of Wales and the Royal Sanitary Institution of Great Britain. During the war he was medical officer in charge of a recruiting area in the Southern Command. He was also a casualty surgeon to St. Paul's Skin Hospital, London, and acted as consultant for candidates for the priesthood for the Roman Catholic Church in Spain. He was an accomplished linguist, and spoke fluently English, French, German, Italian, and Spanish.

Dr. Joseph Patrick Frengley, who died at Wellington, New Zealand, on August 1st, was born in Ireland in 1873, and received his medical education at the Catholic University, Dublin, where he graduated M.B., B.Ch., B.A.O., in 1895, proceeding M.D. in 1899. He obtained the diploma F.R.C.S.I. in 1899, and two years later the D.P.H. of both London and Dublin. In 1902 he was appointed district health officer at Nelson, and was thus one of the pioneers of the public health service in New Zealand. After holding similar posts at Auckland and Wellington, as well as being senior health officer for the combined districts of Wellington, Hawkes Bay, Marlborough, and Nelson, he became deputy chief health officer in 1913, and four years later received the additional appointment of deputy inspector-general of hospitals. After the passing of the Health Act in 1920, Dr. Frengley held the post of deputy director-general of health in New Zealand, but in consequence of prolonged ill health he subsequently undertook the less arduous duties of director of the division of food and drugs in the health department. He took an active interest in the scientific side of medicine, and was an examiner for Otago University. He was one of the first advocates of a municipal milk supply for the city of Wellington. He leaves a family of one daughter and three sons, two of whom are members of the medical profession in New Zealand.

The following well known foreign medical men have recently died: Dr. Georges Thibierge, the Paris dermatologist; Dr. O. W. Madelung, formerly professor of surgery at Strasbourg, aged 80; Dr. Adolf Lesser, emeritus professor of medical jurisprudence at Breslau, aged 75; Dr. F. B. Hofmann, professor of physiology at Berlin University, aged 55; Dr. Oscar Bloch, emeritus professor of surgery at the University of Copenhagen, aged 79; Dr. Edward Bronson, a New York dermatologist and author of an essay on the sensation of itching, published in the New Sydenham Society's publications, aged 83; and Dr. Alessandro Camusso, professor of obstetrics and gynaecology at Cordoba.

The Services.

DEATHS IN THE SERVICES.

Major William Edward Marshall, M.C., R.A.M.C., died on September 24th, of gastritis, at Khartoum, aged 45, within ten days of taking up the post of principal medical officer of the Sudan Defence Force. He was the second son of the late David Marshall, county clerk of Perthshire, and was educated at University College, Dundee, St. George's Hospital, and Edinburgh University, where he graduated M.B. and Ch.B. in 1902; he took the D.P.H. at St. Andrews in 1906. After filling the posts of house-surgeon of Perth Royal Infirmary, resident medical officer of Dundee District Asylum, and assistant bacteriologist at the Lister Institute of Preventive Medicine, he entered the R.A.M.C. as a lieutenant on August 1st, 1908, received a brevet majority on June 3rd, 1918, and became major on August 1st, 1920. He had previously served in the Egyptian Army from October, 1909, to December, 1913, and from 1919 to 1922, and before his return to the Sudan was deputy assistant director of pathology at the Royal Victoria Hospital, Netley. He served throughout the recent great war, was twice mentioned in dispatches, in the *London Gazette* of November 14th, 1916, and September 17th, 1917, and received the Military Cross in November, 1916.

Major Ernest Cyril Phelan, D.S.O., M.C., R.A.M.C., died on August 17th, aged 45, while serving with the British force of occupation on the Rhine. He was born on February 16th, 1881, and was educated at Trinity College, Dublin, where he graduated as M.B., B.Ch., and B.A.O., in 1906. Entering the R.A.M.C. as lieutenant on July 30th, 1906, he became major after twelve years' service. He served in the recent great war, when he was twice mentioned in dispatches, in the *London Gazette* of February

tuberculosis officer and the medical statistician; but as the bacilli have often an unfortunate habit of not coming to light till the disease is well advanced, the absence of such confirmation in many early cases is a fact which has to be faced in any study of this kind. In cases where such a short cut to diagnosis fails, we may surely concede to the tuberculosis officers an ability to diagnose the disease from the other signs and symptoms with sufficient accuracy to render such diagnosis fit for statistical treatment. The failure to find bacilli neither precludes a patient from notification nor from sanatorium benefit, and it is therefore idle to speak of the finding of bacilli as a *sine qua non* in diagnosis. I note, for example, that only 29 per cent. of 1,521 female patients in the L1 stage who were sent to sanatoriums of the Lancashire County Council from 1914 to 1923 had the diagnosis confirmed in this way. If diagnosis apart from tubercle bacilli is liable to be faulty there is no reason to suppose that in our data such mistakes affected unequally the groups of patients compared, since they were all examined by the same medical officers, and all cases in which their diagnosis remained doubtful were rigorously excluded.

If, as Dr. Weatherhead (September 25th) seems to suggest, diagnosis without bacilli is valueless, then the inferences which must follow are not pleasant to contemplate. That all do not share this opinion, however, is shown by the letter of Dr. Prest (September 25th), who writes: "The diagnosis of tuberculosis should be made by a study of the history of the patient and a careful inquiry into symptoms, and not by the presence of physical signs and the finding of tubercle bacilli in the sputum." In order to show, however, that the sanatorium group did not contain an undue proportion of cases with positive sputum, we have taken out the following figures:

Percentage of patients in whom sputum was found positive:

Sanatorium-treated group	9.4
Non-sanatorium group	10.2

In this sanatorium sputum-positive group 31.0 per cent. were of class L3, as compared with 26.6 per cent. in the other group. Hence there is no evidence of the more "definite" cases being chosen for sanatorium.

Dealing only with *sputum-positive* cases, we have as comparative percentages dead or not improved:

	Males.		Females.
Non-sanatorium cases	83.9±3.3	...	92.1±1.8
Sanatorium-treated, less than 3 months	96.4±2.4	...	100.0±3.8
Sanatorium-treated, more than 3 months	91.9±3.0	...	88.9±5.0

These figures show no significant differences for females, but a significant advantage to the non-sanatorium group for males. For the *sputum-negative* cases the corresponding percentages dead or not improved were:

	Males.		Females.
Non-sanatorium cases	56.0±3.5	...	48.6±2.1
Sanatorium-treated, less than 3 months	58.6±6.2	...	47.4±7.7
Sanatorium-treated, more than 3 months	51.9±6.5	...	54.3±5.7

These show no significant differences for either sex. These figures are sufficient to indicate that subdivision on the ground of sputum findings would not have altered the conclusions reached in the paper.

The authors had no prior reason to doubt the efficacy of sanatorium treatment; they were only interested to get at the truth, whether unpalatable or not. Such a course can only benefit our profession and our patients alike in the long run. If an investigation of a similar nature can be undertaken on sound lines on the data of a tuberculosis unit with modern sanatorium in England, and if this yields results more satisfactory to us all, the authors will be only too pleased to know that their disappointing conclusions are not applicable to sanatoriums in general.—I am, etc.,

Galton Laboratory, University College, London, W.C.1, Oct. 1st. PERCY STOCKS.

SIR,—Having now perused the memoir by Messrs. Stocks and Karn on "The influence of sanatorium and dispensary treatment and housing conditions on pulmonary tuberculosis," I may, perhaps, be allowed a word or two of criticism.

The fact that the presence or absence of the tubercle bacillus has not been taken into consideration by the authors in the grouping of the cases robs this investigation of a great deal of its value. Indeed, it introduces a very serious fallacy.

Again, as your correspondent, Dr. Walters, has pointed out, sanatorium treatment—to be of any permanent value—must be of long duration, certainly of at least twelve months; and to regard as "sanatorium treated" patients who have been in an institution for fifteen days only seems to be rather absurd. These cases should have been classified as "otherwise treated."

But one must admit that sanatorium treatment, especially if it is of short duration, has little or no effect on the ultimate prognosis of cases discharged as improved or quiescent only. The mental factor comes into play, and the patient loses heart, and on the first setback he gets he goes down hill rapidly. That is the reason why we prefer to cure one case rather than "patch up" twenty, and when institutions are anxious to get "suitable cases" they have this in mind, and not mere statistical considerations, as the authors suggest.—I am, etc.,

Grampian Sanatorium, Kingussie, Oct. 4th. FELIX SAVY.

APPENDICITIS AND VEGETARIANISM.

SIR,—During recent years I have seen many Oriental and relatively few European patients: I have removed many European appendixes but never an Oriental one.

In Kurdistan I once operated on a native for what I thought was appendicitis, but found early tuberculosis of the caecum. Twice in natives of Burma I have found suggestive symptoms, but these cleared up in a day or two, did not recur, and did not justify operation. One man complained of a "nat" (devil) in the right iliac region, but the "devil" was located in the urethra and right seminal vesicle.

In Mesopotamia and Burma the natives eat meat, but it is well diluted with rice, split peas, coarse wholemeal unleavened bread, and such green vegetables as are obtainable; they do not eat potatoes. On making a sanitary inspection of Burmese or Indian lines one cannot help noticing that most of the faeces in the latrine tins are semi-solid. Most Orientals pass their motions regularly in the early morning and squat while doing so.

Professor Wilkie has shown that gangrene rapidly occurs in an isolated segment of the small intestine of a cat fed on meat, but not in that of a cat fed on carbohydrate. Dr. Leonard Williams points out that owing to a largely vegetarian uncooked diet, regular habits, and a squatting defaecation posture, the savage completely empties his lower bowel every day, and thereby escapes the large group of diseases due to intestinal stasis. It seems logical to suppose that if we were to adopt their habits we should not suffer from appendicitis.

I fear, however, that so long as eating and drinking hold their places among the chief pleasures of Western civilization we shall continue to suffer from alimentary sepsis.—I am, etc.,

H. WILLIAMSON, M.D., F.R.C.S.Ed.,
Captain I.M.S.,
Ightham, Kent, Oct. 5th. Surgical Specialist, Burma District.

POOR LAW MIDWIFERY FEES.

SIR,—I have read some correspondence in the JOURNAL on the fees paid by life insurance companies for examination and report, and agree that the minimum fee should be one guinea, but irrespective of the amount of the policy. I have insisted on this for many years.

What appears to me much more unsatisfactory is the case of the Poor Law medical officer, who receives from the board of guardians the wretched fee of half a guinea for a midwifery case, whether he has to deal with a neglected shoulder or a placenta praevia with locked twins. This was the fee when I held such an appointment thirty-five years ago, and it is still the same. If I resign the job, and my partner refuses it (as he would), it would doubtless result in the introduction of an opposing practitioner into a village which will only support two men, so I am rather "up a tree." It is quite time that this state of affairs was altered. It is nothing less than a scandal that an experienced man should be offered, and obliged to accept, such a paltry fee.—I am, etc.,

Topsham, Devon, Oct. 7th R. C. WORSLEY.

neurology at the West End Hospital for Nervous Diseases; from November 29th to December 11th a course in diseases of the chest at the Victoria Park Hospital; from November 22nd to 27th a course in proctology at St. Mark's Hospital; and from November 22nd a course for practitioners at the London Temperance Hospital. Copies of all syllabuses, the General Course Programme of the Fellowship, and its Journal, may be obtained from the Secretary of the Fellowship, 1, Wimpole Street, W.1.

Professor Dr. C. Rasch of Copenhagen will give an address on the effect of light on the skin and skin diseases, at the meeting of the Dermatological Section of the Royal Society of Medicine, 1, Wimpole Street, at 5 p.m., on Thursday, October 21st.

The annual meeting of the National Association of Insurance Committees will be held at the Hearts of Oak Buildings, Euston Road, N.W.1, on October 21st and 22nd and if necessary October 23rd.

A matinée in aid of the funds of the Tavistock Clinic, the objects of which were described in the Educational Number of September 4th, 1926 (p. 453), will be given, by permission of the Co-optimists, at His Majesty's Theatre on Friday next (October 22nd), at 2.30 p.m. Particulars can be obtained from the Honorary Secretary of the Tavistock Clinic, 51, Tavistock Square, W.C.1.

The Royal Sanitary Institute will hold its thirty-eighth congress at Hastings next July. The Home Secretary, Sir William Joynson-Hicks, Bt., M.P., will be president. In connexion with it there will be a health exhibition.

Under the housing schemes undertaken by the London County Council since the war the number of houses and tenements completed up to the end of September is 14,542 (more than half of them at Becontree), and 4,344 houses and tenements are at present under construction.

At the September matriculation of the University of London there were 40 successful candidates in the first division and 380 in the second division; 40 took the supplementary certificate in Latin, 5 in mathematics, and one each in Greek, chemistry, mechanics, French, and music.

A portable *x*-ray equipment has been designed in the research department, Woolwich, for the examination of aeroplanes. The details and drawings are published in "R.D. Report No. 68" by H.M. Stationery Office, with illustrations and working drawings, and may be of interest to medical radiologists.

Dr. A. J. Martin, on his departure from Bloxwich, where he practised for thirty-two years, has been presented by his friends and patients with a bookcase, a clock, and a gold cigarette case.

A tablet to the memory of the late Dr. Claude B. Ker placed in the entrance hall of the Edinburgh City Hospital, Colinton, was unveiled recently by Lady Sleigh. The memorial, which is of marble and bronze, bears in relief a portrait of Dr. Ker and an inscription recording that he was superintendent of the hospital from 1897 to 1925.

Owing to the further generosity of Mr. George Buckston Browne, the sum of £1,000 has been added to the Memorial Prize Fund of the Harveian Society of London which bears his name. The council of the society will therefore be able to give more valuable prizes for successful essays.

The fifth Rumanian Congress of Oto-rhino-laryngology will be held at Bucarest, under the presidency of Dr. A. Costiniu, on October 24th and 25th, when the following subjects will be discussed: adenoids in their endocrine aspects, introduced by Koleszar, Vasiliu, and Tatarsky; deaf-mutism in Rumania, introduced by Darabau. Further information can be obtained from the general secretary, Dr. Mayersohn, 81, Calea Musilov, Bucarest.

Courses of lectures in German are arranged by the University of Vienna throughout the year in connexion with post-graduate medical instruction. Special international courses are to be held in February, June, September, and November, each lasting a fortnight, and dealing with the recent work in various specialties. Syllabuses of both these courses may be obtained, free of charge, from the Kurs Bureau of the Vienna Faculty of Medicine, Schlösselgasse 22, Vienna VIII.

Dr. Claus Schilling, professor at the Robert Koch Institute for Infectious Diseases, Berlin, has been appointed a member of the Malaria Commission of the League of Nations.

The present epidemic of typhoid fever in Hanover is attributed to infection of one of the three waterworks supplying the town. Up to September 17th 1,504 patients, of whom 42 have died, have been admitted to hospitals, but the number of cases nursed at home is not yet known. A severe epidemic of typhoid fever has broken out also at Tokyo, 3,500 cases having been notified in a few days.

A municipal institute of electro-radiology has been founded by the city of Paris at 37, Boulevard St. Marcel, with Dr. Zimmern as director. The indigent inhabitants of Paris and the Seine department will be treated free, and other patients will be required to pay fees according to the scale fixed by the municipal council.

A sympathetic obituary notice of the late Dr. John Thomson appears in the October issue of the *Archives de médecine des enfants* written by the editor, Dr. Jules Comby.

In the four weeks ending August 14th there were 497 deaths due to automobile accidents in 78 large cities in the United States.

Dr. Maurice Roch, professor of clinical medicine, has been appointed dean of the medical faculty at Geneva.

The École d'Anthropologie de Paris will celebrate the fiftieth anniversary of its foundation on November 3rd.

Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to ***The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.***

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the British Medical Journal alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the British Medical Journal must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the Journal, should be addressed to the Financial Secretary and Business Manager.

The ***TELEPHONE NUMBERS*** of the British Medical Association and the British Medical Journal are *MUSEUM 9861, 9862, 9863,* and *9864* (internal exchange, four lines).

The ***TELEGRAPHIC ADDRESSES*** are:
EDITOR of the British Medical Journal, *Aitiology Westcent, London.*
FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*
MEDICAL SECRETARY, *Mediocra Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

QUERIES AND ANSWERS.

Leucoplakia.

"B. A." asks for suggestions for the treatment of leucoplakia, in a case with no suspicion of syphilitic origin.

Adrenaline and Glycosuria.

"I." asks: What is the nature of the glycosuria produced by the administration of adrenaline, and is its continued administration likely to produce or predispose to diabetes?

Recurrent Boils.

"W. L.-C." (Torquay) asks for suggestions for the treatment of a woman, aged 32, who has been suffering from boils for the last eight years, never being free from them for more than two months. She is of good physique; catamenia and bowels regular; no sugar or albumin. The following remedies have been tried: Extraction of teeth for pyorrhoea, vaccines, calcium, yeast, injections of manganese, and stannoxyl—and in desperation, charlatan medicines.

The "Strange Fever" of 1558.

Dr. W. Johnson Smyth (Bournemouth) writes: In Dr. Sydney Carter's *History of the English Church and the Reformation* (Longmans, Green and Co.) it is recorded on page 185 that towards the close of Queen Mary's reign, in 1558, no fewer than thirteen bishops and numbers of clergy were carried off by a fever raging at the time. It would be interesting to know if our medical historians can enlighten us as to the nature of this fever—presumably it was a pandemic of some kind. Was it influenza or ague?

*** According to Creighton's *History of Epidemics in Britain*, 1555-58 was a sickly period for all Europe, the diseases being of the types of dysentery, typhus, and influenza. On the Continent 1557 was remarkable for a widely prevalent "pestiferous and contagious sickness." In England "strange agues and fevers" prevailed that year, and with greater severity in 1558, carrying off many of the wealthiest men. The widespread sickness of 1557-58 has been commonly grouped under "influenza," but in using this term Creighton adds that it is "at best a generic

17th, 1915, and December 24th, 1917, and received two decorations—the Military Cross on February 18th, 1915 (when he was one of the earliest recipients of that order, founded on January 1st, 1915), and the D.S.O. on January 1st, 1918.

Major Harold Stewart Dickson, R.A.M.C., died of pneumonia in the nursing home at Srinagar, Kashmir, on August 31st, aged 46. He was born on April 16th, 1880, and was educated at Bart's, taking the M.R.C.S. and L.R.C.P.Lond. in 1905. He entered the R.A.M.C. in July, 1909, received a brevet majority in June, 1919, and became major less than two months afterwards—on July 27th, 1919. He was placed on temporary half-pay, on account of ill health, on January 7th, 1921, but rejoined within a year. He served in the war of 1914-18, gaining his brevet as major.

Medico-Legal.

A DANGEROUS DRUGS PROSECUTION.

At Marlborough Street Police Court, London, on October 8th, Mr. Cancellor, the stipendiary magistrate, heard summonses preferred by the Director of Public Prosecutions against John Kynaston, whose address was given as Langham House, Regent Street, W., for aiding, abetting, counselling, and procuring Rowland Pawsey to attempt to obtain possession of a dangerous drug—powdered opium—contrary to the provisions of the Dangerous Drugs Act, 1920, and, further, under the Medical Act, 1858, with falsely describing himself as a recognized licentiate in medicine and surgery by the use of the description "M.R.C.S., L.R.C.P.Lond."

Mr. Vincent Evans, for the Director of Public Prosecutions, said the defendant treated a Mr. Pawsey for catarrh, and, in furtherance of the treatment, handed him a prescription. At the top of the prescription were the words "Late R.A.M.C., L.R.C.P., M.R.C.S.," and at the bottom the defendant had signed his name, adding, "Lieutenant-Colonel R.A.M.C., retired, M.R.C.S., L.R.C.P. Lond." As a matter of fact in 1922 his name was removed from the *Medical Register* by the General Medical Council, and his name was subsequently removed from the registers of the two Colleges in question.

The defendant objected to being referred to as "Mr. Kynaston," saying he was a retired lieutenant-colonel of the R.A.M.C.

Rowland Pawsey, registrar of marriages, Marylebone, cross-examined by the defendant, said he did not ask the defendant to give him a dangerous drug. The witness was aware that the defendant had had a dispute with the General Medical Council, and gathered further that the defendant was no longer on the *Medical Register*; witness inferred that he had been removed. The defendant had not entered into a conspiracy to "aid, abet, counsel, or procure" the witness to get the drug.

C. Siggers, a chemist of Abbeville Road, said that Mr. Pawsey handed him the prescription. Cross-examined by the defendant, witness said he had no reason to suppose that Mr. Pawsey required the drug for an improper purpose, but, after making inquiries, witness refused to make up the prescription because the defendant's name was not on the *Medical Register*.

The defendant urged that there was no case whatever to go before a jury. On the first summons he elected to go for trial. The hearing was adjourned for further argument.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

The third examination for medical and surgical degrees will be held from Tuesday, December 14th, to Thursday, December 23rd. Part I (Surgery, Midwifery, and Gynaecology) will begin on December 14th, and Part II (Principles and Practice of Physic, Pathology, and Pharmacology) on December 15th. The M.Chir. examination will be held on December 14th, 17th, and 18th. The names of candidates for the third M.B. examination and for the M.Chir. examination should be sent to the Registrary on or before October 26th.

UNIVERSITY OF SHEFFIELD.

Dr. J. H. Blakelock, M.Sc., M.B., Ch.B.Sheff., has been appointed to the post of assistant bacteriologist.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

The annual meeting of Fellows and Members will take place at the College, Lincoln's Inn Fields, on Thursday, November 18th, at 3 p.m.

Copies of the report to be presented can be obtained by any Fellow and Member on application to the Secretary, from whom copies of the agenda (to be issued on or after November 12th) can also be obtained.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

The following, after examination, have been admitted as Fellows of the Royal Faculty of Physicians and Surgeons of Glasgow:

A. Barr, A. A. Bell, J. A. Bingham, D. M'K. Black, A. D. Blakely, J. M. Chrystie, T. H. J. Douglas, A. Garrow, Z. H. Jafri, W. D. MacFarlane, E. G. Mackie, T. K. MacLachlan, W. M'William, G. T. Mowat, W. A. Sewell, H. E. Whittingham, J. M. Young, R. F. Young.

Medical News.

The minutes of the evidence taken before the Royal Commission on Lunacy and Mental Disorder have been published in three volumes. The first volume includes the evidence taken between October 7th, 1924, and February 10th, 1925, and the second that between February 24th and December 11th, 1925; these two parts are published at one guinea each net. The third volume contains the index and appendices and is published at 10s. 6d. net. The three volumes may be obtained from H.M. Stationery Office, Adastral House, Kingsway, W.C.2; York Street, Manchester; 1, St. Andrew's Crescent, Cardiff; 120, George Street, Edinburgh; or through any bookseller.

At the quarterly meeting of the Grand Council of the British Empire Cancer Campaign, on October 12th, the chairman of the Finance Committee, Sir Richard Garton, urged the necessity for a sustained effort to obtain adequate funds to meet the increasing calls for assistance in researches into the cause of cancer. Mr. J. P. Lockhart-Mummery, chairman of the Executive Committee, announced that the visits of the members of the Intelligence Committee to the principal American and Continental cancer research laboratories would shortly terminate, and that reports on the most recent work on cancer outside the British Empire would be submitted to the Grand Council. Lieut.-General Sir John Goodwin reported that additional county committees were being formed in Buckinghamshire, Berkshire, Cornwall, Durham, Hampshire, Lincoln, Norfolk, Nottingham, Sussex, and Surrey. Sir William Milligan and Sir Robert Jones were elected members of the Grand Council, and Professor Leiper was appointed a member of the Scientific Advisory Committee of the Campaign in place of the late Sir William Leishman.

Ticket holders for the annual service of the Guild of St. Luke, at Westminster Abbey, on October 17th, are requested to be at the West Cloister door not later than 6.15 p.m.

The fiftieth anniversary dinner of the Cambridge Graduates' Club of St. Bartholomew's Hospital will be held at King Edward VII Rooms, Hotel Victoria, Northumberland Avenue, on Wednesday, November 10th, with Sir Humphry Rolleston, Bt., K.C.B., in the chair. The honorary secretaries are Dr. H. N. Burroughes and Mr. R. M. Vick.

The annual dinner of past and present students of University College Hospital will be held at the Hotel Cecil, Strand, W.C., on Wednesday, October 27th. Dr. Philip D. Turner, will take the chair at 7.30 p.m. Tickets, price 12s. 6d. (not including wine), may be obtained from the honorary secretaries, Mr. Gwynne Williams, F.R.C.S., and Dr. F. M. R. Walshe, University College Hospital Medical School.

The old students' dinner of St. Thomas's Hospital will be held at the Hotel Victoria, Northumberland Avenue, London, on Friday, October 29th. Dr. R. Percy Smith will take the chair at 7.30 p.m.

Sir Arthur Stanley will deliver the presidential address at the meeting of the Incorporated Association of Hospital Officers to be held at 28, Bedford Square, W.C.1, on Wednesday, October 27th, at 7 p.m.

A new series of post-graduate clinics arranged by the University of Sheffield commences to-day (Friday), October 15th, at 3.30 p.m., when Mr. Brockman lectures on conditions simulating the acute abdomen. The meetings, which take place at the Royal Infirmary, Sheffield, will be continued on succeeding Fridays up to and including Friday, December 17th, at the same hour.

At the meeting of the Post-Graduate Hostel at the Imperial Hotel, Russell Square, W.C.1, on Tuesday, October 19th, at 9 p.m., Mr. Frank Kidd will open a discussion on pyelonephritis. On Wednesday, October 20th, at 9 p.m., Mr. J. P. Lockhart-Mummery will discuss the prognosis of rectal cancer. All medical practitioners are cordially invited.

The second of the series of lectures on emergencies in medicine and surgery organized by the Fellowship of Medicine will be delivered by Mr. Joseph Adams on acute appendicitis on October 21st, at 5 p.m., in the lecture hall of the Medical Society, 11, Chandos Street, W., and on the same day a special lecture demonstration on cataract will be given by Mr. A. Caddy at the Royal Westminster Ophthalmic Hospital at 5 p.m. Both lecture and demonstration are open to members of the medical profession without fee. From November 1st to 13th there will be a course for general practitioners at the Hampstead General Hospital in medicine, surgery, and the specialties; and from November 1st throughout the month a course in venereal diseases at the London Lock Hospital. From November 15th to December 4th a course in gynaecology will be held at the Royal Waterloo Hospital; from November 15th to December 11th a course in dermatology, including pathology if desired, at St. John's Hospital; from November 22nd to December 18th a late afternoon course in